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October 477

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HIGH TIMES OCTOBER



“Most people think ebb and flow is a method to water your plants, but they’re wrong: Ebb-and-flow systems are designed to exchange the air in the medium. The entire root mass must be submerged underwater as the medium floods.”

—Goin’ with the Ebb & Flow, page 74

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47 NorCal Knockout

High Times returned to San Francisco for our 20th Cannabis Cup on American soil and our sixth by the Bay. Check out the Cup highlights! *By Mike Hughes*

58 Pot Jobs Report 2015

The increase in legalized medical and recreational marijuana means more ways to earn a living in the cannabis industry. Here’s how. *By Emma Johnson*

67 The Ultimate Cannabutter Experiment

Cannabis author and edibles expert Elise McDonough puts four popular methods for making cannabutter to the test in an attempt to discover, once and for all, which one is really the most efficient at capturing every last molecule of THC.

74 Goin’ With the Ebb & Flow

At BUDS in Pasco, Washington, an ingenious grower has developed an innovative ebb-and-flow hydro system that produces consistently great ganja. It’s a new approach to hydroponics. *By Dan Skye*

89 Plant Diseases by Jorge Cervantes

Renowned marijuana expert Jorge Cervantes details the diseases that can affect your plants, including causes, potential damage, and how to spot them early on, as well as prevention and controls. This excerpt from *The Cannabis Encyclopedia* will help keep your pot plants safe and thriving.

99 Motor City Marijuana

When activist John Sinclair was sentenced to 10 years in prison in 1969 for giving two joints to an undercover cop, it touched off a pro-pot movement that thrives to this day in Michigan. Can marijuana cure what ails Detroit? *By Chris Simunek*

109 The High Times Interview: Mel Frank

In the early 1970s, Mel Frank and Ed Rosenthal published their groundbreaking cultivation book *The Marijuana Grower’s Guide*. Its message was simple: Anyone could grow pot at home that was as good as or better than the imports you bought from your dealer. *By Chris Simunek*

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Women of the Cannabis Cup

As support for marijuana increases, women are joining the cannabis community as never before. It's significant because surveys of the past have shown that women have been less inclined to favor legalization. Not anymore. Today, women are found on all levels of the emerging industry—in management, in the service sector, in the garden and in our activist ranks. In fact, over the past five years of holding the High Times Cannabis Cup in America, we've witnessed a marked increase in the attendance of female pot fans. Editor-in-chief Dan Skye has prowled every US Cannabis Cup with his camera and photographed hundreds of women enjoying a spectacular weekend of weed celebration. Check out Dan's online gallery of the fairer sex happily engaged with ganja at the Cup!



Women's presence in the pot world increases daily.



Danko judges the buds.

Danko's Grow Q & A

The world of pot gardening generates hundreds of questions daily. Fortunately, senior cultivation editor Danny Danko answers your questions daily. Check out Danny's expert grow advice and make sure that you're on the road to success.

Back to School!

Sorry we had to say that, but if you're headed back to the college, check out the top gadgets every student stoner needs to outfit their dorm room in our online guide to pursuing an even higher education.

Nico's Nuggets

Every week, editor-at-large Nico Escondido delves into the universe of the dank, addressing both the obscure and the commonplace issues that beset growers. Get your necessary knowledge from Nico online!

Glass Artist of the Month



BONELORD's rigs are popular worldwide.

Eric Swartz (aka BONELORD) began flameworking in late 2008. Shortly after purchasing his first torch, Eric met his mentor Daniel Ottone of BD glassworks in Rhode Island, who taught him varied glassblowing techniques. He also learned the industry while traveling the entire East Coast festival circuit. He relocated to Northern California to hone his craft as a solo artist. But after a few months he returned to the East Coast, this time to Florida, just as the dab movement hit the cannabis community.

BONELORD rigs sell briskly in

his home base of Orlando and his use of social media has expanded his fan base internationally. Like most pipers, he's committed to his growth as an artist. Whether it's competing against fellow artists at CHAMPS or helping new lampworkers set up shop, he approaches his craft with pragmatism.

"I'm pleased with where I am, and look forward to where I'll be in the future," Eric says.

One more thing—"BONELORD loves weed!"

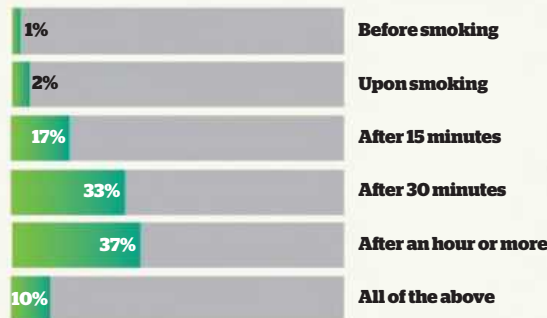
[See BONELORD's work online.](#)

POT POLL

Whither the Munchies?

Recently, a physician asked us to poll readers as to when they get the munchies. Why is this important? He explains: "Now if THC caused the munchies, one would feel the need to eat as soon as one stopped inhaling." He opines that the departure of THC from the CB1 receptors with falling blood levels promotes irrational hunger, the opposite pattern of excitation and inhibition, stating "munchies are really the first sign of 'withdrawal' after getting high." Over 1,600 told us when the munchies set in for them.

Cast your vote in our latest poll online!



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Has It Gone To Pot... For Good?



"The Marijuana Industry Could Be Bigger Than The NFL By 2020"
—*The Washington Post* (10/24/14)

"Legal Marijuana Could Be The Next Great American Industry"
—*CNBC* (1/14/14)

"Legal Marijuana Is The Fastest-Growing Industry In The U.S."
—*Huffington Post* (1/26/15)

The hot topic these days? Pot. Every major news organization, media outlet and consumer magazine have caught wind of *High Times'* favorite subject and haven't been shy about covering the cannabis industry's meteoric rise and uncharted growth. Are we bitter? Are we rubbing it in your faces, saying, "See, we told you so!" No, of course not, but what we are saying is... "What the hell took you so long?" Y'see, we know a thing or two about strength in numbers—and the numbers are in our support. More than half of the American public favor full legalization and it's just a matter of time until our beloved plant is freed of its shackles. These are exciting days and as we pull ourselves up out of the shadows and aim the spotlight on weed, what we see is a fully legitimized business thanks to the undeniable credibility of medical and recreational cannabis—and in part to the news organizations who speak the truth and have joined our ranks.

Joining our editorial ranks this month is business journalist Emma Johnson who in "Pot Jobs 2015 Report" (p. 58) leads us through the state of the employment market and what skills are necessary to land one of these sought-after roles. Don't miss the four "Cannabusiness Success Stories" profiling four unique industry leaders as they share their work advice, loves and hates.

Just last year I brought a new Cannabusiness column to the pages of *High Times*—a clear signal that we're committed to covering all aspects of cannabis activity in addition to the amazing grow content we feature each month. Mike DiPaola takes a look at the price of weed and how supply and demand plays its part as states legalize.

Everyone wants a piece of the pie. Investors, big and small-time business owners, and entrepreneurs all. Want. In. Turn these pages and read with confidence because after 40 plus years of doing this, *High Times* knows a little something about the business of cannabis.

Keep growing!

Jen Bernstein
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Facebook Phobia

I've been supporting *High Times* since the late 1970s. I am in my 50s and, like most serious adults, I have no desire to give Mark Zuckerberg my data. So why would a magazine that has long chronicled illicit activity require me to be data-mined just to make a comment? We aren't all weed-smoking, narcissistic twentysomethings anymore. If you aren't willing to cater to the fiftysomethings that partake, I'll just buy a different magazine.

Quit aiming your gun at your feet. It's silly to require a Facebook account that verifies my real name to post a comment to your site. *Jesus Christ!*

Tom R.

FYI, there are plenty of fiftysomethings (and older) on Facebook—and Facebook isn't the only entity that's data-mining you. Here's a solution: Never use your computer again!

High on the Farm

I'm writing to you because the online article on ibogaine caught my eye. I'm 38 and have a couple of college degrees. Two years ago, I acquired some rural land and started growing rare plants for a living, with the sole purpose of proving that datura was a safe and wonderful drug if used correctly and with respect. I now have datura farms on Facebook and sell on two sites online. I'm launching my own website very soon.

Good datura isn't easy to grow. But I was so successful that a friend suggested that I branch out and try my hand at other things. Iboga is illegal here, so I did lots of research and found that its "first cousin," *Voacanga africana*, is just as effective if prepared correctly. Now I grow it, and it's as amazing as iboga. I also grow "rare" cacti, absinthe, mandrake, passionflowers, black henbane and belladonna, in addition to seven kinds of datura.

In my personal experience, datura is far better than any other natural drug for seeing the spirit world. I may seem like the "girl next-door," but behind the doors of my greenhouse is another universe!

DeAnna
Mississippi

Fracking Heroes?

I'm a petroleum engineer, and I was slightly appalled by your article "Getting Fracked" [February 2015]. While there



We aren't all weed-smoking, narcissistic twentysomethings anymore.

were many factual statements presented in your article, it's very misleading. There may be some nasty stuff involved in a frack job, but it's typically just a fraction of 1 percent of the total mixture.

The hydrocarbons that we're trying to produce have been trapped for millions of years. When a frack job is performed correctly, the fracking fluids will be trapped as well. You could almost say we're doing the world a favor: We're taking these toxic chemicals and putting them deep underground where they can do no harm. Sure, the marijuana industry relies on clean water, but properly performed frack jobs don't contaminate water. In the fresh-water zone, there are multiple layers of cement and steel to protect our water supply. Frack jobs occur way below the freshwater table.

Engineers and the pioneers of fracking are heroes: We reduce our country's dependency on foreign oil, which saves the lives of soldiers and helps Americans keep the freedoms that have allowed the marijuana industry to thrive. If you don't like fracking, then turn off your grow lights and ride a bike. If you can't see this, then frack you, too!

You suggest windmills. Then how about this: In one big wind turbine, there is one metric ton of neodymium, which

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is only produced in (unregulated) China. The manufacturing of neodymium creates gobs and gobs of toxic waste and requires the strip-mining of huge areas. Drink that!

People like me saved this country so that hippies like you could smoke pot and protest. So go ahead, I guess.

Droopy F.

Kent Lebsock, author of the article, responds:

I guess everyone defines "heroes" differently.

Yes, you are correct: The chemicals used at each fracking site comprise between 0.5 and 2.5 percent of the fracking mixture (water, sand, chemicals) used to break down the rock under the earth. However, it's not the percentage, but rather the nature of the chemicals—and especially their overwhelming cumulative effects when such massive amounts of water are used—that should concern us.

A short list of the chemicals in use includes mercury, lead, formaldehyde, radium and methanol, although the fracking industry will not release specifics on its mixtures—only a vague

general description, citing corporate privilege. But even at the low overall percentage you cite, these toxins are known to cause disease and contamination. Each well site will use one to eight million gallons of water (again, depending on the site). Let's assume that an average of four million gallons is used per site, of which 2 percent is fracking mixture. That means 80,000 gallons of carcinogenic, toxic and poisonous chemicals are pumped into the earth in all directions—including under homes and beneath agricultural and grazing lands. In such quantities, these chemicals are known to cause cancers and myriad other diseases. Fracking has also been linked to sinkholes, earthquakes and contamination of drinking water.

Continuing with our mathematical formula, let's extrapolate the total risk we're being exposed to: 500,000 active gas wells in the US, multiplied by four million gallons of water per fracking, multiplied by 18 times that a well can be fracked. That's 36 trillion gallons of water and 72 billion gallons of chemicals required to run our current gas wells.

Additionally, the water is contaminated and unavailable for clean uses. As with nuclear waste, we don't know what to do with the wastewater from fracking. Currently, it's stored in ponds with the surface lined with plastic. Do we really think that's not a danger?

Corporate profiteers are lying to the public. Our leaders should insist on safe, renewable, nontoxic energy sources. Instead, we're contaminating the earth for future generations. It's time to think independently and not listen to pro-fracking propaganda. Each of us is responsible.

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GOLDEN GATE GANJA The Golden Gate Bridge opened in 1937. It connects the San Francisco Peninsula and Marin County, and averages 110,000 vehicles crossing daily. And here's the best fact of all: Did you know the bridge's span measures 4,200 feet? It's true! Just one more reason why the City by the Bay is the nation's capital of cannabis. *Photo by Lochfoot*

**Contact
High**





BUD IN THE BARRACKS Readers who served in the military might find something in this photo that reminds them of how regimented life in the ranks was. But this isn't a barracks; it's an innovative ebb and flow hydro system designed by Botany Unlimited of Pasco, WA that speeds the growth cycle and produces healthy, vibrant plants. Read "Goin' With the Ebb & Flow" on page 74. *Photo by Dan Skye*

**Contact
High**



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NORCAL'S FINEST FLOWERS It's hard to believe, but our recent NorCal Cannabis Cup at the Cow Palace in San Francisco was our 20th Cup in the US—and mind-blowing buds are getting better than ever! Witness the strains that took the top prizes. For more of our event coverage, turn to page 47. *Photos by Lochfoot*

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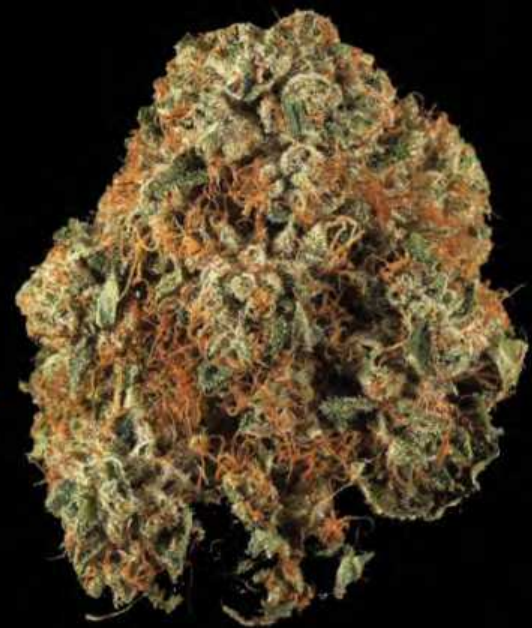
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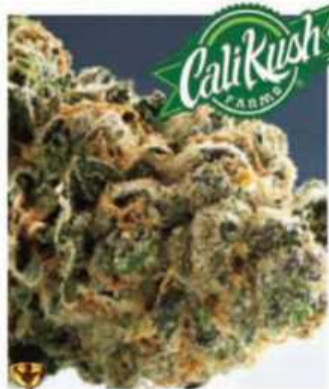


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Entertainment

Gettin' GRiZ

The Detroit-born, Denver-based funk phenom is riding high p.34



Food

Want S'more?

A classic fireside treat that can't be beat—now with ganja goodness p.40



Washington's Weed Woes

Heavy taxes on legal cannabis will only keep the black market alive. *By Russ Belville*

Medical marijuana supporters in Washington State have been reeling since the passage of Senate Bill 5052, which seeks to impose a regulatory framework on the state's previously unfettered medical marijuana industry. The bill was necessary, its proponents argue, because the lack of regulation has been undercutting the intent of Initiative 502, which legalized the use and sale of recreational cannabis in the Evergreen State.

Because of SB 5052, hundreds of retail medical marijuana outlets will be shuttered. Patients who were allowed to cultivate 15 plants and possess 24 ounces of marijuana will now be allowed just six plants and three ounces—provided they join a newly created "voluntary" registry. Meanwhile, the 10-person collective gardens that were allowed under earlier legislation have now become four-person cooperatives restricted to patients 21 or older (although the plant limit was raised to 60).

Legislators say without these changes, the retail system created for recreational marijuana sales was in danger of failing. After all, why would people visit the state's few dozen existing I-502 retail outlets (out of a planned 334) and pay \$25 per gram, when they could get a medical recommendation and purchase their pot at the far more numerous unlicensed dispensaries, which charge as little as \$10 per gram?

Or consider this: Washington has almost two million more people than Colorado, yet the marijuana tax revenues for the month of April were nearly \$9 million in both states. But



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« that's not really an apples-to-apples comparison. In Colorado, the taxes on recreational pot consist of a 15 percent excise tax, a 10 percent special sales tax, and a 2.9 percent regular sales tax. In Washington, the taxes on recreational pot include a 25 percent excise tax on producers; a 25 percent excise tax on processors; yet another 25 percent excise tax on retailers; and state and local sales taxes, which can be as high as 9.6 percent in some areas. Thus, to hit roughly \$9 million in tax revenues in April, Colorado sold about \$74 million in marijuana products, compared to \$25 million in Washington State.

Seattle alone has nearly 300 unlicensed medical dispensaries and just 15 licensed I-502 stores. In April, those 15 stores had a combined \$3.7 million in sales—the greatest one-month total for any city in Washington. But coming in a close second was Vancouver, a city with a quarter of Seattle's population and only four licensed I-502 stores; it had combined retail sales of \$3.3 million.

The prime factor in Vancouver's success is geography: It's just across the river from Portland, Oregon, a city almost as big as Seattle. In fact, the best-selling pot shop in Washington is Vancouver's Main Street Marijuana, with \$1.5

Lawmakers know they have a problem on their hands, but they can't quite figure out that the solution is to dramatically lower the taxes on marijuana.

million in sales for the month of April. Uncle Ike's in Seattle came in second, with \$1.23 million in sales, followed by another Vancouver store, New Vansterdam, with \$1.18 million. No other pot shop in Washington State has topped \$700,000 in a single month.

Tourists seem to be willing to pay these high taxes. Thus, by imposing new restrictions on medical marijuana in Washington, the state's legislators have just ensured that the problem they're trying to solve will only get worse, not better. That's because tourists aren't the ones buying marijuana in large quantities on a regular basis. Instead, medical marijuana patients buy the most weed and do it the most often—assuming it's affordable. Indeed, the proliferation of unlicensed dispensaries proves that this demand exists. But these patients aren't going to switch over to a new retail system that doubles or triples their costs.

Washington's lawmakers know they have a problem on their hands, but they can't quite figure out that the solution is to dramatically lower the taxes

on marijuana. At least now they're making an effort to reduce the state's triple whammy of excise taxes—25 percent on producers, processors and retailers—to just a single excise tax of either 30 or 37 percent, depending on which bill passes; that would bring the effective tax rate somewhere closer to Colorado's.

In the meantime, it's important to remember that consumers will gladly pay taxes on retail marijuana, but only when those taxes constitute an acceptable trade-off for the trouble of growing it themselves or relying on the black market. In the case of Washington, this means their total costs can only be slightly higher than the prices that evolved naturally in the state's previously unfettered market for medical pot.

Therefore, the solution to Washington's weed woes isn't for medical sales to become *more* taxed and regulated, like recreational sales, but—ironically—just the opposite. ✨

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HIGH FIVE

Miraculous and Mind-Expanding

Hallucinogens offer a wide array of properties for healing both body and mind. *By Mark Miller*



Shrooms for Alcoholism

In March, researchers helming a pilot study at the University of New Mexico reported that psilocybin could positively impact the treatment of alcoholism. Participants who had indulged in binge drinking at least twice in the previous month received just a single dose of psilocybin and experienced a drastic decline in their alcohol consumption: Over the next nine months, they drank an average of 50 percent less.



LSD for OCD

In March, professor David Nutt at the University of Cardiff in the United Kingdom orchestrated the world's first brain-imaging study of people tripping on LSD. The 20 volunteers were each injected with 75 micrograms of acid and given two types of scans, including one measuring small magnetic fields generated in the brain. Nutt's objective is to unlock the therapeutic potential of LSD to treat afflictions like obsessive-compulsive disorder (OCD) and depression.



MDMA for Better Relationships

A recent study led by the University of Chicago and published in the April *Journal of Psychopharmacology* investigated the effects of MDMA on speech content to reveal how ecstasy affects social interactions. Thirty-five previous users volunteered to take a dose of X. The researchers reported that the drug increased the emotional and social content of the participants' speech.



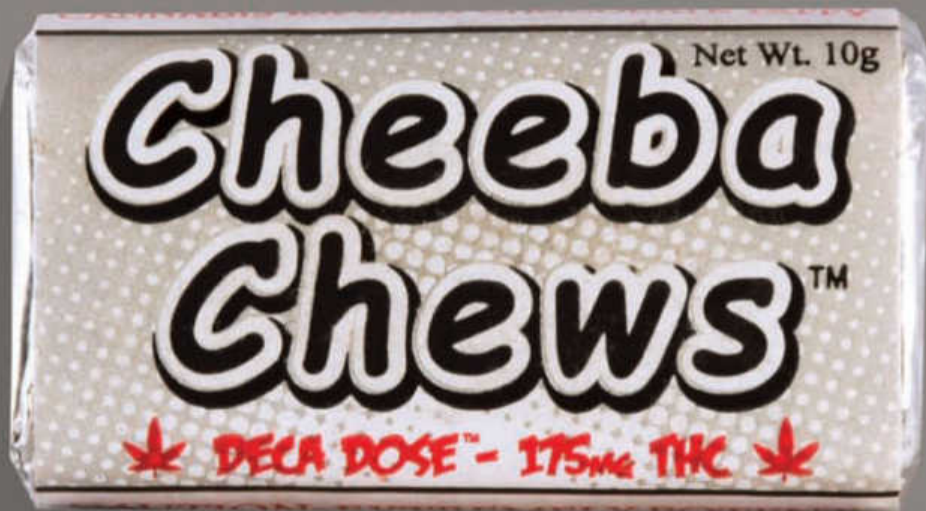
Ayahuasca for Depression

In March, the University of São Paulo published a study wherein researchers administered a mild dose of ayahuasca, the South American jungle vine with entheogenic properties, to six participants suffering from depression. Each had been unresponsive to at least one pharmaceutical antidepressant. Within three hours, improvements in mental states occurred and continued for the next three weeks.



Ibogaine for Opiate Addiction

The African psychoactive alkaloid ibogaine is used in New Zealand to treat opioid dependence. Dr. Geoff Noller spent three years studying addicts treated by the country's only licensed ibogaine provider. Last November, he reported that 11 had completed the program, and that five remained opioid-free after one year. Ibogaine's "dream state" enables self-reflection, which may motivate users to kick drugs.



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LiLo's Ayahuasca Trip

Lindsay Lohan has again made headlines for using drugs. This time, however, it wasn't an embarrassment for the oft-troubled 28-year-old actress, since Lohan had a positive, enlightening experience on hallucinogens.

In a recent interview with the UK mag *Sunday Times Style*, Lohan divulged: "I did ayahuasca. It changed my life."

To obtain the South Americanentheogenic brew, which is made from plants containing the powerful natural hallucinogen DMT, and consume it properly, Lohan consulted a shaman. During her ayahuasca trip, she said she witnessed her own birth and death, which enabled her to shed the "wreckage of my past."

Based on published accounts of ayahuasca trips, it appears that Lohan had a fairly common and beneficial psychedelic experience, which could aid in her recovery from substance abuse.

Having recently completed court-ordered community service, Lindsay appears to be on the right path. Perhaps, with the help of ayahuasca, her years of very public struggle are now behind her.

Fake Pot, Real Death

Still thinking about trying those banned fake-weed products like K2 or Spice? Don't. According to a recent report from the Centers for Disease Control, 15 people died from using synthetic marijuana in the first five months of 2015. Actual cannabis, meanwhile, has killed no one, ever.

Only one of the reported fake-weed deaths involved the use of other drugs. In addition to the jump in fatalities, synthetic pot was also responsible for 3,572 calls to poison centers across the United States from January through May 2015—an increase of nearly 230 percent from the same period in 2014. Most of the calls (over 80 percent) involved men. The average age of the poisoning victims was 26; the primary effects cited were agitation, rapid heartbeat, drowsiness, vomiting and confusion.

EVEN THE BUSTS ARE BIGGER IN TEXAS

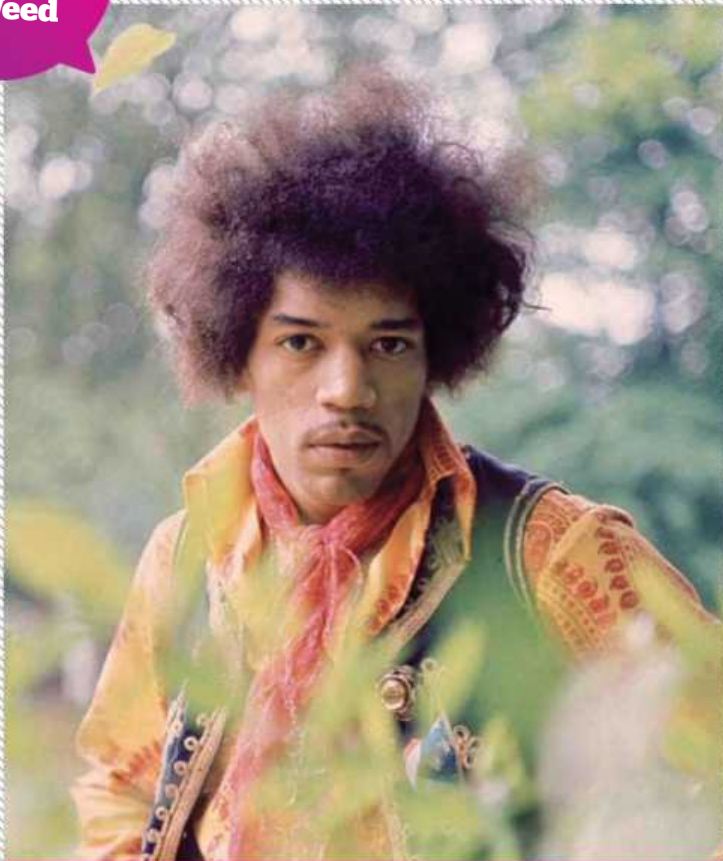


Nearly 110,000 cannabis plants were seized by law enforcement in what some are calling the biggest pot bust in Texas history.

Local, state and federal authorities teamed up to chop down and haul away the plants from a massive marijuana farm in Lipscomb County, Texas. It took an entire weekend to dismantle the guerrilla grow, which was located in the Texas Panhandle county bordering Oklahoma. No arrests have been reported, but an investigation is underway and the king-sized crop has been transported to the DEA's Dallas office.

Last year's seizure of 100,197 plants in Polk County, worth roughly \$175 million, was believed to be the state's biggest pot bust prior to this. Imagine the tax dollars those 200,000-plus plants could have reaped for the Texas state treasury in a legal market.

Inside the Wide World of Weed



Heady Hendrix

Getting baked and listening to Jimi Hendrix has been a stoner rite of passage for nearly 50 years. Now, stoners may have a chance to get baked on Hendrix, as the iconic guitarist is the latest legend to contribute his likeness to pot products—that is, if certain legal squabbles regarding the trademarks to Jimi's name and image can be resolved.

Silver State Trading—a Reno-based medical marijuana company—announced a licensing deal to market Jimi's Cannabis Collection in Colorado, California and Nevada. The collection will feature a unique line of flowers and concentrates branded as Jimi's Genetix.

The legal skirmish underway pits Purple Haze Properties, run by Jimi's brother Leon, against Experience Hendrix, which controls the late guitarist's trademarks and musical rights and doesn't seem to have any interest in linking Jimi with weed—at least any further than he already is.

Survey Illuminates Dark Web Drug Sales

The 2015 Global Drug Survey reports that an increasing number of users are turning to the so-called "dark web" to score, fueling a proliferation of virtual drug bazaars, despite the life sentence handed down to Silk Road founder Ross Ulbricht in May.

The survey was administered by King's College London and involved 100,000 drug buyers worldwide. It found that 23 percent of the participants purchased drugs online for the first time in 2014—up from 13 percent just one year prior. The top three most popular drugs on these sites were MDMA (ecstasy), LSD and cannabis.

Sweden boasted the highest number of people buying illicit drugs via the Internet. The US came in sixth, with 8 percent of the American respondents saying they bought drugs online in 2014.

There are an estimated 25 dark-web sites currently selling drugs online, shielding users from network surveillance and detection through the use of Tor anonymity software and Bitcoin currency.



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Chong Fights New Cancer With THC

Cannabis-comedy legend Tommy Chong recently disclosed that he's battling rectal cancer and—no surprise—that medical marijuana is playing a big role in his treatment.

"I'm using cannabis like crazy now, more so than ever before," the 77-year-old stoner icon noted. He successfully used medical pot to combat prostate cancer in 2012.

Cannabinoids like THC and CBD have a demonstrated ability to shrink tumors. And though he's confronting his own mortality once again, Chong opts for optimism: "I'm in treatment now," he told *Us Weekly*. "Either I get healed or I don't. But either way, I'm going to make sure I get a little edge off" with pot.

Get well soon, Tommy!

Out-of-Control Cops Caught on Tape

One of the most outrageous law-enforcement raids on a legal dispensary in California's two-decade history of medical marijuana took place in May, when Santa Ana police busted a local pot shop. The raiding officers proceeded to play darts, consume a cannabis edible and mock an amputee patient. The dispensary in question, Sky High Holistic, has filed a lawsuit against the Santa Ana Police Department, the mayor and other city officials.

In video footage from the incident, one officer appears to consume a pot-laced "medible," while two others can be heard disparaging a dispensary volunteer, Marla James, who is legally blind and confined to a wheelchair due to an amputated leg. A male officer asks, "Did you punch that one-legged old Benita?" And a female officer replies, "I was about to kick her in her fucking nub."

The Sky High suit also alleges that Mayor Miguel Pulido and the police department took bribes from certain dispensaries in exchange for favorable treatment.

SCHOOLS SURVEIL STONER STUDENTS



In Colorado, students caught using or selling pot will now be monitored by the state after Governor John Hickenlooper signed the new "Track the Children" bill into law.

The bill's official purpose is to monitor the aftereffects of legalizing recreational cannabis. The new measure also supplements a 2012 law mandating that police and district attorneys gather information on the types of punishment meted out to students busted for pot.

The first such disciplinary report is due August 1 and will incorporate data from both the 2013-14 and 2014-15 school years.

In Washington, the other state to legalize recreational pot in 2012, authorities tracked marijuana-related punishments for the 2013-14 school year and found that 4,116 students were suspended—and 265 expelled outright—for weed offenses.



"...The youngest one grew buds."

Grow Girl

Susan Olsen, the actress who played snitchy youngest daughter Cindy on the classic, campy '70s sitcom *The Brady Bunch*, recently revealed that she used to grow pot. Olsen, now 53, admits that she and her former husband cultivated cannabis indoors.

Olsen shied away from characterizing herself as a pot dealer in her interview with an Australian website owned by Rupert Murdoch's News Corporation. But she did acknowledge that she and her then-husband "grew [cannabis] hydroponically." Olsen added that she didn't care much for getting high, since it makes her paranoid. However, she did enjoy growing "such a complicated, wonderfully fascinating plant."

Unfortunately, the illegality of growing ganja actually contributed to her decision to leave her husband. "It just bothered me too much that we were doing something so illegal," Olsen explained.

Medical Marijuana Miracle

"I'd rather be illegally alive than legally dead." That statement by 15-year-old Colton Turner, as simple as it is profound, quickly went viral after he spoke those words at a medical marijuana seminar in reference to using cannabis for his Crohn's disease.

Turner was likely afflicted with Crohn's in 2011, when he nearly drowned and subsequently developed a bacterial infection. Crohn's is a chronic, inflammatory bowel disease that causes abdominal pain, bloody diarrhea and other nasty symptoms.

As recently as 2014, Turner was in a wheelchair after ineffective pharmaceutical drugs left him seriously ill. With Illinois dragging its feet on establishing a viable medical pot program, his family decided to relocate to Colorado last year. Turner started using medical pot in March 2014—and by July he was mountain-climbing!

Turner, who has testified before the Colorado legislature, is changing the world every day he lives a healthier life.

COMEDY BANG! BANG!

IFC



HIGHWIRE

Dispatches from the international drug war. *By Bill Weinberg*



Killer cops

Police Accused in Mexico Massacre

Mexican journalist Laura Castellanos released the findings of an explosive new investigation in April, with evidence showing that federal police carried out a massacre of civilians on January 6 in the town of Apatzingán in Michoacán state.

There were two shooting incidents that day, everyone agrees. The first took place at the Apatzingán town hall, during a protest against the disbanding of an anti-narco citizens' militia. The second happened six hours later, when officers fired at a dozen civilian vehicles following a police convoy. Authorities said that nine people were killed in the crossfire, all of them members of a narco-gang called Los Viagras.

The new investigation, which appeared in the newsweekly *Proceso*, was based on months of interviews with witnesses and survivors (mostly anonymous, for obvious reasons). It revealed that the death toll was actually 16, with several unarmed civilians executed at close range by federal police. As they opened fire on the protestors, one officer reportedly shouted, "Kill them like dogs!" Federal authorities have opened their own investigation into *Proceso's* claims.



Forced down under fire

Chopper Down in Operation Jalisco

On May 2, Mexican authorities announced that gunmen from the New Generation narco-gang engaged in battles with the federal police and army troops around western Jalisco state, leaving seven people dead (including three soldiers) and forcing a military helicopter to make an emergency landing after it came under fire. The gunmen set fire to cars, buses, banks and gasoline stations in response to the federal raids, dubbed Operation Jalisco. The operation, intended to break up the New Generation gang, was ordered after 15 state-police officers were killed April 7 in an ambush of their convoy on the main highway to Guadalajara.

Urban Warfare in Reynosa

On April 18, gun-battles left three dead in Mexico's northern border town of Reynosa, Tamaulipas, after authorities captured a Gulf Cartel boss, identified only by his nom de guerre, "El Gafe" (The Jinxed). Officials said parts of the city were blocked with burning vehicles as gunmen attacked federal police forces.

Peasants March Against Narco-Violence

Indigenous Maya peasants in Mexico's southern state of Chiapas marched cross-country in April to protest the violence by local narco-gangs and their continued protection by corrupt officials. The "pilgrimage" left the rural town of Simojovel at the end of March; some 15,000 peasants



Father Pérez

walked 240 kilometers over rugged terrain to Tuxtla Gutiérrez, the state capital. The pilgrimage was organized by the Catholic pacifist group Pueblo Creyente (Faithful People), with the support of the local diocese of San Cristóbal de Las Casas in response to a wave of narco-violence in Simojovel.

Pueblo Creyente asserts that the narco-political establishment waged a campaign of harassment and threats against Simojovel's parish priest, Father Marcelo Pérez, after he led protests

against the local violence and corruption. The group declared in a statement: "The town of Simojovel has no safe drinking water, the health center is in pitiful condition, but the cantinas, prostitution centers, drug trafficking, arms trafficking, sex trade, corruption, etc., are increasing..."

"Institutionalized corruption is governing the country," the faith group added, "therefore all people must rise up and organize to defend life [and] the future of our children."

Families of the Missing Take Protest to US

On March 28, more angry demonstrations erupted in Mexico's conflicted southern state of Guerrero, as students from the rural college of Ayotzinapa clashed with police in the capital,



De la Cruz

Chilpancingo, during a march demanding the safe return of 43 students who went missing last year. Cars were set on fire after police attacked the marchers. The 43 students disappeared during protests in the town of Iguala last September; it is now believed they were handed over to a murderous narco-gang by corrupt police.

The weekend before the Chilpancingo demonstration, family members of some of the missing students held a vigil in New York City's Union Square. It was one stop on a US tour to raise awareness of their plight and to protest Washington's continued aid to Mexico's corrupt and brutal police as part of the so-called War on Drugs. Felipe de la Cruz, a spokesman for the Ayotzinapa families, told the crowd in Union Square: "Here, from the heart of imperialism, we are not going to permit this case to be closed."

One month later, the caravan returned to New York City for a march on the United Nations, marking the seven-month anniversary of the students' disappearance. 🌱

For updates on these and other stories, see Bill Weinberg's websites, GlobalGanjaReport.com and WorldWar4Report.com.

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SPOTLIGHT

Seeds & Stems Pendants

This chic line of pendants from Ozma (Autonomy) is simple, sustainable and eco-friendly. The resin used, the chain and findings, and the encased seeds and stems are all ethically sourced in Northern California. A nod to the rise of legal marijuana, these elegant and low-key pieces will elicit an approving look from “those who know.” Each pendant is one of a kind and contains three to five seeds, one to three stems, and a tiny amount of weed. \$17-\$22; ozmaautonomy.com

Ink & Weed Unite!

Some tattooers pick a style and stick with it, but Denver-based Destroy Troy would rather keep fusing different influences to create an aesthetic all his own. Starting off in the traditional vein during his early career in Kansas City, he's since evolved to incorporate elements of pop surrealism, black-dot work and bold colors into his designs.

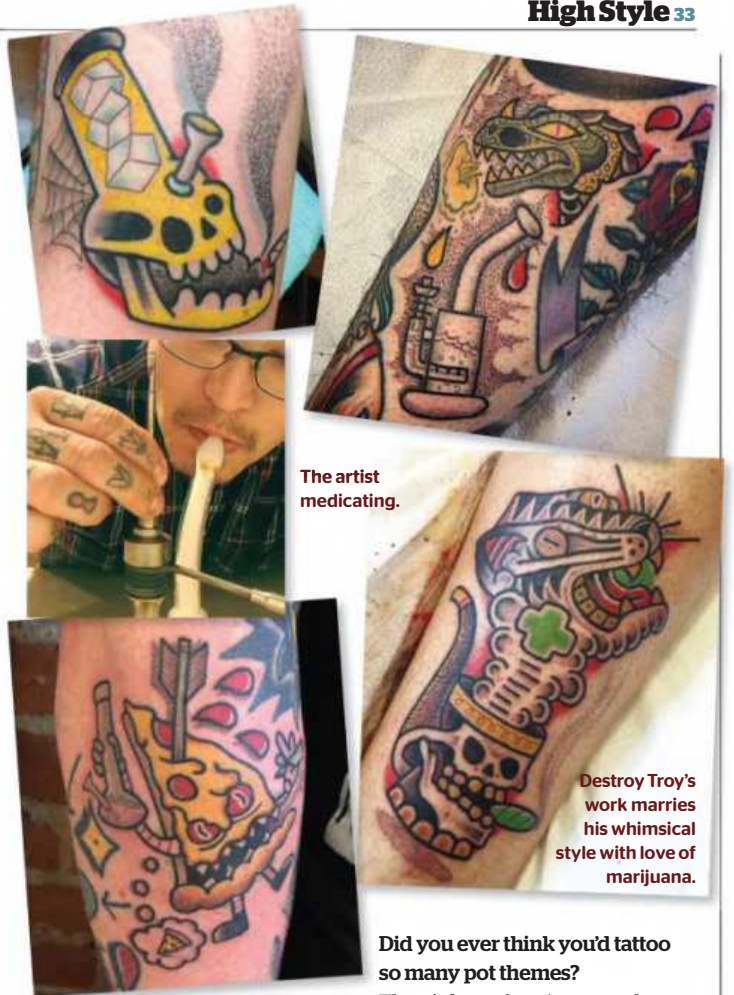
The Japanese-born artist isn't merely covered in tattoos; he's *layered* with them. And since settling in Colorado, he's found a new passion beyond ink: growing his own cannabis. Reinvigorated by the local legalization movement, Destroy Troy continues to hone his craft at the tattoo shop Til Death Denver.

What's been the biggest influence on your tattoo style?

I traveled around a while when I started tattooing. I spent a little bit of time in Australia, New Zealand, Istanbul and parts of Europe. Every city and country has a lot of different things—in New Zealand, there's a style of tribal tattooing that incorporates negative space, so that's one thing I picked up. I picked up the dot work when I was in Europe.

How has marijuana improved your health?

This October will make three years of not having carpal tunnel syndrome. There's a lot of repetitive motion holding a heavy



The artist medicating.

Destroy Troy's work marries his whimsical style with love of marijuana.

Did you ever think you'd tattoo so many pot themes?

There's less of a stigma out here to having a pot-related tattoo. People are like, “Yeah, I live in Colorado. Why not?”

What's the local tattoo clientele like?

A lot of them smoke, so they don't mind that I'm high while I'm working. Most of them show up with weed, and we'll go out and smoke a joint. One client gave me a bong as a parting tip. Things like that would never happen in Kansas City. *Zena Tsarfin*

Visit tildeathdenver.com.

tattoo machine, and marijuana has been a lifesaver. I was also born with hyperhidrosis—a condition that causes the hands, feet and armpits to sweat a lot. I used to take medication for it, until I moved to Denver.

What's helped propel you most as a grower?

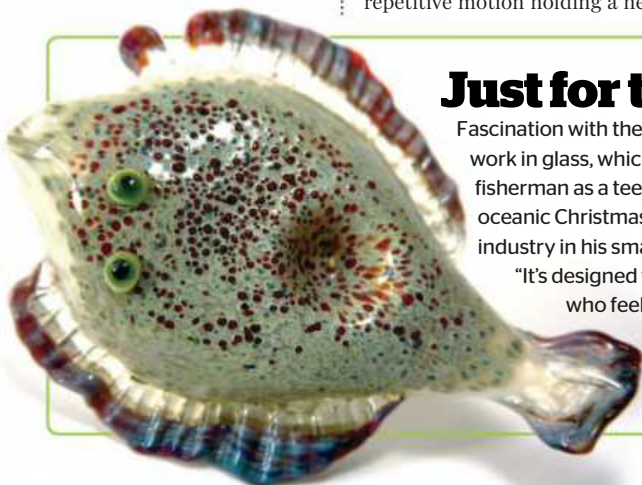
Meeting people during industry events was a major help. After discovering I was a new grower, people kept telling me: “Growing weed is more addictive than actually smoking it!”

Just for the Halibut

Fascination with the sea and all its creatures has been Glenn Lyons's continuing inspiration for his work in glass, which he sells at Summer House Design in Port Townsend, Washington. An avid fisherman as a teen, Lyons now creates glass fish sculptures, sea-inspired scent bottles and oceanic Christmas ornaments. And these days, in support of the legal recreational cannabis industry in his small Victorian seaport town, Lyons is making fish pipes.

“It's designed for a small quantity of high-caliber weed,” Lyons told HT. “I support anyone who feels that [smoking] it may be helpful in a therapeutic usage.”

This little halibut looks good in the wheelhouse or on the coffee table—just add some kind bud, and he'll help keep you afloat through stormy weather. ilovesummerhouse.com



Say it Loud

GRiZ's electro soul and future funk go hand in hand with weed. *By Abdullah Saeed*



Stoking creativity with his namesake strain

Any 24-year-old stoner would jump at the chance to have his own namesake strain, but GRiZ gets to live that dream in overdrive. The Detroit-raised, Denver-based funkster's GRiZ Kush took home second place at the 2015 Denver Cannabis Cup in the People's Choice category. In order to win that accolade, GRiZ and his buds at the Colorado dispensary Native Roots employed a finely tuned regimen for selecting his Kush. "They put together an A, B and C jar," GRiZ recalls. "They said, 'I want you to taste-test these for a week and write some stuff down.'"

GRiZ took to the assignment

"The funk and the skunk—it's the perfect handshake."

with abandon, depleting the jars and toking hard before coming up with the winner—a cross between Tangerine Haze and Pakistani Chitral Kush. The strain's hybrid qualities struck the perfect balance for GRiZ, who prefers less of the soaring head high that a well-cultivated, pure-bred *sativa* delivers.

Still, he's got a soft spot for the right landrace strain. "Personally, I'm a Durban Poison fan," GRiZ says. "It was the

first strain of weed I fell in love with, way back in high school."

GRiZ grew up in Michigan, a state that continues to become more accepting of weed, though it has yet to adopt truly liberal cannabis laws. "I think the social climate is ripe for it to be a recreational state," he predicts. "Most of the public believes weed is something incidental."



Show Love, Spread Love

The musical phenom from Detroit by way of Denver purveys equally heavy doses of "the funk and the skunk." After releasing his fourth studio album and endorsing his namesake strain, GRiZ is set to take the weed world by storm.

GRiZ discovered Detroit's love for weed when he and his older brother started selling it in high school. Though a career in music took him far from his hometown, his brother stuck with the local weed game and is now a dispensary owner deeply tied to the legalization movement in Michigan.

Meanwhile, GRiZ decided to settle in a place where legal weed is already the norm. "Denver is an epicenter for this culture," he says. "I vibe with people in that area. I smoke weed. I like smoking it a lot, and I don't think it should be criminalized."

Life in Denver allows him access to the best of his inspirational plant, as well as a core segment of his fan base that sees the same link between his music and the cannabis high. "The funk and the skunk—it's the perfect handshake," he says.

GRiZ's creative process is directly fueled by a custom Illadelph bong that he received while performing in the glass company's hometown of Philadelphia. "I had to christen it right then and there," he says. As naturally as he wails on his signature saxophone, GRiZ tore a fat hit from his new bong in the middle of the set and has kept the piece at the ready ever since.

His tours have taken him all over the world, but as his sound continues to win fans, GRiZ remains humble in his duty to deliver the funk to appreciatively stoned silences everywhere. Soon enough, he'll have a brand-new collection of jams to complement the cannabis. "The new album will be really nice to get high to," he promises. "Just put it on in the background and *relax*." 🌿



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Hayes, Donnelly and Gent: brothers in music



On Higher Planes

After nearly three decades together, The Figgs are a band that breathe the same air and share the same blood. *By Josh Chambers*

“Do you know that record?” asks Pete Donnelly from the stage of the Spring Street Gallery in Saratoga Springs, NY. He’s addressing a boy who has chosen a song at random from a stack of pages known as “The Book.” The song is “Glass Onion,” and Donnelly and his Figgs bandmate Mike Gent have just pulled off an empathic performance as if from the ether.

It’s 10 p.m. on a Friday night. Tomorrow, Gent and Donnelly will reunite with drummer Pete Hayes, and 100 or so fans will enjoy the privileged delirium of watching The Figgs record a live album in a gorgeously sprawling home studio.

The boy shakes his head. “You should check it out,” says Donnelly, smiling. “It’s pretty good.”

Once in a while, along

comes a band that shifts the zeitgeist in such a fundamental way that an entire culture springs up around their music. Take as reference The Jam, Elvis Costello, AC/DC and The Kinks. Then add punk’s pure abandon; marry that with impeccable craft, assaultive showmanship and preternatural musical empathy—and you have an idea of the culture that The Figgs so deftly define.

The band began building their myth as teenagers in a series of legendary performances in upstate New York, circa 1987. “We were ambitious,” Donnelly recalls. “Right away we had gigs, a van, managers, posters. We were exploding musically and utilizing all of our references.”

As an ever-present and immersive manifesto, the ceiling beams of their rehearsal

space were aggressively scrawled with graffiti proclamations and scratched ideologies. “I was struck by a slogan that said ‘Everyone Jam, We’ll Meet at the Riff in 15 Minutes,’” Hayes offers. “That was my introduction.”

After a series of singles, self-produced albums, major label deals, and the departure, return, and subsequent re-departure of founding member and inspirational figure Guy Lyons (now of Blockhouses), The Figgs found universal acclaim through constant touring and recording.

The depth of their collective experience is undeniable. Onstage, The Figgs play as if in the grip of a divine psychic bond, anticipating each other’s moves and effortlessly reading the room. They trade instruments like surgeons in an operating theater, jam perilously into the weightless cosmos, and then hit the groove like holy hail, all the while performing as if their very lives were at stake.

“I’m not a religious man, but it’s the fucking glory of God to play music,” Donnelly declares. “There was a day in my life where I said, ‘I will never have a bad gig, because that would be insulting to the music.’”

In 2008, Hayes was diagnosed with MS, which gives The Figgs a unique perspective on legalization. “There’s something important to be said about the illegality of pot,” Donnelly opines. “Criminalization wrecked entire communities of black people. Some people don’t realize how these fucked-up drug laws have affected such a huge population in this country.”

“If pot can help people feel better when they’re dying,” Gent asserts, “why *wouldn’t* you want to make that totally available?”

“Yeah, *especially* people who are dying,” says Hayes, adding drollly: “Dying to get high!”

The Figgs’ discography, available at thefiggs.net, is an astonishing collection of varied musical impulses. This music is backbone and anchorage versus emptiness and loss. Find out where they are playing, and go there. Become part of this culture.

You will be a fan. And this will be your band. 🌿



Sonic Connoisseurs

“To be in control of great music is a life changer, it changes your world—versus having to listen to the radio, which is depressing, because of the news, or because the choices of the DJs are depressing. Control of music is essential.” —Pete Donnelly

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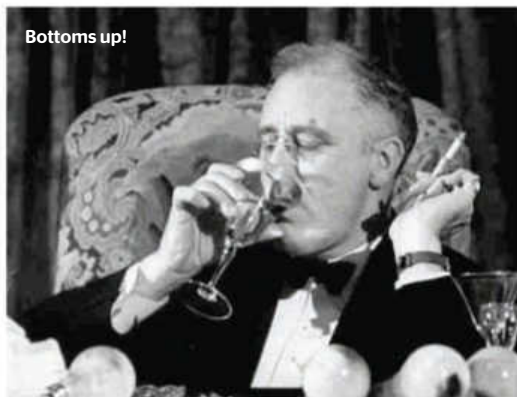
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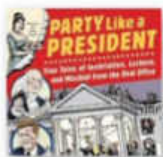
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Presidents Gone Wild Kegger in the Oval Office!

Occupying the highest office in the land can take a heavy toll. Fortunately, throughout history many US presidents have figured out the secret to managing the job's inherent stress: epically blowing off steam. And whether the palliative of choice was women, weed, booze, tobacco or food, the partying proclivities of various POTUSes are expertly chronicled in Brian Abrams's new book, *Party Like a President: True Tales of Inebriation, Lechery, and Mischief from the Oval Office*.

Abrams has meticulously combed through the private lives of presidents from George to Barry. In this book, he humorously dispels rumors (sorry, folks—Washington was *not* a stoner); calls out gluttons (a 250-pound Grover Cleveland earned the nickname “Uncle Jumbo”); and examines the nasty sexploits of, um, Warren G. Harding (who supposedly caught gonorrhea from a prostitute and referred to his penis as “Jerry” in love letters to a mistress).



Party Like a President
Brian Abrams
(Workman Publishing Company)

But most of all, Abrams reveals how the inhabitants of the Oval Office liked to get plowed. Think of it like *Drunk History*, except it's the leader of the free world, not the story-

teller, who's shitfaced.

Interestingly, this breezy exploration of presidential vice also offers some serious insight into the state of the country under the leadership of each oddly perverse, obnoxiously puritanical or down-to-fuck/down-to-party head of state. On the one hand, we have FDR celebrating the repeal of Prohibition with a beer, and JFK ushering in the swinging '60s by toking a little weed in the White House; on the other, a priggish Ronald Reagan kicks off the era of “Just Say No” by raising the national drinking age to 21.

Party Like a President includes illustrations by John Mathias and 44 cocktail recipes, each one corresponding to a different administration—so you can honor the office of the presidency by getting hammered one chapter at a time. *Mike Hughes*

MUSIC RECOMMENDATIONS



Timbre
Sun & Moon
(Aurora)

Timbre's double album is generous and ambitious in scope. She's one of a handful of artists using the harp to create contemporary music, her voice a strong, vibratoless soprano to Joana Newsom's wild-child burr. *Sun* has bright-eyed melodic lines and a drummer to accompany them; *Moon* is

on a grand and classical scale, employing a full choir and strange harmonics reminiscent of Benjamin Britten's “Ceremony of Carols.” The lyrics are difficult to decipher, but you can't really argue with a sprite massaging your eardrums. Gorgeous, if you like this sort of thing. *Kyra Himmelbaum*



Tyler, The Creator
Cherry Bomb
(Odd Future)

Imagine it's 2055, and Kennedy Center honoree Tyler, The Creator sits with the president in anticipation of an homage to his musical legacy. This is our future. Tyler's been gaining traction ever since he hijacked the Brechtian double-bind on *Goblin*, his manic assertions contradicted by the voice of

his therapist—thoroughly destabilizing point of view. On *Cherry Bomb*, he inhabits a sonic maelstrom. He still deals out abandonment and self-doubt in one fist, bravado in the other—but with each creation, he drops more of the useless tropes of hip-hop, gloriously exposing himself. *Josh Chambers*

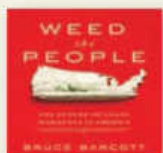
BOOK RECOMMENDATIONS



When I Was a Dynamiter
Lee Quarnstrom
(Punk Hostage Press)

In this memoir, Quarnstrom describes life as a Merry Prankster, traversing a multitude of off-the-beaten-paths with Ken Kesey at the Acid Tests. An avid psychedelicist, he claims to have seen “the whole universe in a freckle” while tripping on DMT. Later, through *Realist* founder

Paul Krassner, Quarnstrom became an editor at *Hustler*, where he saw many exposed freckles but fewer cosmic displays. Quarnstrom also worked as a straight newspaper reporter, yet no matter whose freckles he's describing, he's a born raconteur with magnet eyes for the absurd. *Michael Simmons*



Weed the People
Bruce Barcott
(Time Books)

Weed the People examines the cannabis industry and its prospects at the moment when it's taking flight. Despite a self-consciously conversational “stoner” style, Barcott strives to be objective: He explores the “reasons to keep it illegal” and airs the (extremely dubious) links between

schizophrenia and cannabis use. He also takes a look at the USA's own political schizophrenia: After several chapters on freewheeling Colorado and Washington, he devotes one to the racist dystopia of Louisiana, where harsh marijuana laws are being used to enforce the “New Jim Crow.” *Bill Weinberg*

GAME RECOMMENDATIONS



Xenoblade Chronicles 3D
New Nintendo 3DS
(Monolith Soft/Monster Games)

The stars of marginality have aligned, and you happen to be a JRPG fan with a New Nintendo 3DS, but without a copy of 2012's *Xenoblade Chronicles* for Wii—forging an obligation as strong as the Monado energy blade to try this game. *Xenoblade* is pure escapist fantasy featuring

Nintendo's largest game world, transferred to this portable title—thankfully so, as the exploration of Bionis is the heart of the experience. If downgraded graphics are an issue, add some chronic to your game, and you'll be too busy slaying mechanical monsters and dinosaurs to care. *Tyler Merfeld*

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Toast 'em up!

MUNCHIES

Medicated Marshmallows

Bungles Edibles packs a popular confection with medicinal pot.

Recognizing young talent is one of the best things about the High Times Cannabis Cup competitions. Cory Caudill, a 28-year-old with professional culinary experience, decided to strike out on his own and start Bungles Edibles, a small business he runs completely independently. “Sometimes I’m up until 4 a.m. getting everything packaged,” he says, “but I’m much happier

working for myself!”

Caudill’s hard work paid off when his debut entry in the 2014 Seattle Cannabis Cup grabbed the judges’ attention due to its incredible originality and interactivity, earning him third place in the Medical Edibles category. Bungles S’Mores Cup was a small chocolate-and-graham-cracker truffle topped by a homemade cannabis-infused marshmallow. The instructions invited users to “Torch me, please!”—and the judges were happy to oblige, using the plentiful torches on hand for the occasion. “Everyone’s got torches these days,” Caudill laughs. “I play off of nostalgia, so I thought it would be fun.”

Despite having no staff to assist him, and using only the most basic packaging, Caudill impressed judges with his entry’s ingenuity, technical execution and great flavors, creating a memorable moment for everyone. Winning at the Cup “absolutely legitimized my business,” he says. “I’m much more well-known now!” *Elise McDonough*

KUSHY PILLOW FLUFF

- 3/4 cup granulated sugar
- 1/2 cup glucose syrup (or, if not available, light corn syrup)
- 1/4 cup water
- 1/8 tsp. salt
- 2 large egg whites (room temperature)
- 1/4 tsp. cream of tartar
- 1/2 tsp. pure vanilla extract
- 1 vanilla bean, split in half and with seeds scraped out
- 2 grams decarboxylated cannabis concentrate

Over medium heat, combine the sugar, syrup and water until the sugar is dissolved. Increase the heat to high and bring the mixture to 240°F, measuring the heat with a candy thermometer.

Place the egg whites and cream of tartar in the bottom of a stand mixer fitted with a whisk attachment. Whip the egg whites to soft peaks on medium speed. The goal is to have them whipped and ready when the

syrup mixture reaches 240°F.

Once the mixture is ready, lower the mixer’s speed and slowly drizzle 1 to 2 tablespoons of syrup into the egg whites to temper them. (Be careful: If you add too much syrup at once, the egg whites could curdle and you’ll be left with scrambled eggs and not a nice, smooth marshmallow!) Then slowly drizzle the rest of the syrup down the side of the mixing bowl, being careful not to get it onto the whisk.

After drizzling the syrup into the mixture, add the decarbed cannabis concentrate and then the salt, vanilla extract and vanilla bean. Increase the speed to high and whip until the marshmallow is stiff and glossy (about seven minutes or so). Eat immediately, or cool and refrigerate in an airtight container for up to two weeks. *Stones 8-12.*



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-Phoenix, AZ

(OG Kush)
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-Columbus, OH

MARKET ANALYSIS

Prices by the ounce

Index Watch: Once again, the Mids Index is all over the map. After hitting a 9-month low in July and then an 11-month low in September, the Mids Index shot up \$20 to finish October at a 4-month high. All other indices finished within \$5 of their previous month's average.

US Price Index

YTD Average: \$298



Kind Index

YTD Average: \$371



Mids Index

YTD Average: \$275



Schwag Index

YTD Average: \$101



(Diesel)
"Do not underestimate the UK. There is dank available."
-London, ENGLAND

(Girl Scout Cookies)
"American prices are high"
-Quebec City, CANADA

TRANS HIGH MARKET QUOTATIONS

STATE	CITY	STRAIN	PRICE
Alabama	Birmingham	Blueberry	\$360
Alaska	Anchorage	Blue Dream	250
Arizona	Phoenix	Girl Scout Cookies	330
Arkansas	Little Rock	Purple Kush	350
California	Sonoma San Diego	Cinderella 99 Bubblegum	320 280
Colorado	Colorado Springs Denver	Ghost Train Haze #1 Bruce Banner	260 300
Connecticut	Hartford	Sour Diesel	400
Delaware	Newark	Headband	360
Florida	Orlando	Green Crack	380
Georgia	Atlanta	Ghost Train Haze #1	400
Hawaii	Maui Oahu	Headband Durban Poison	260 250
Illinois	Chicago Springfield	Skywalker OG Death Star	350 320
Kentucky	Louisville	Purple Kush	300
Louisiana	Covington	Mazar	350
Maine	Bangor	White Widow	260
Maryland	Baltimore	Girl Scout Cookies	360
Massachusetts	Revere	Bubba Kush	300
Michigan	Upper Peninsula	Skywalker OG	250
Minnesota	Minneapolis Saint Paul	Trainwreck Banana Kush	350 380
Missouri	Springfield	East Coast Sour Diesel	320
Montana	Helena	Strawberry Cough	250
Nevada	Las Vegas	Chemdog	400
New Hampshire	Manchester	Pineapple Kush	300
New Jersey	Hoboken	Deadhead OG	400
New York	New York Rochester	Strawberry Cough Sour Diesel	400 270
North Carolina	Raleigh	Blue Dream	360
Ohio	Columbus	OG Kush	250
Oregon	Portland	Jack Herer	200
Texas	San Antonio	Purple Trainwreck	275
Virginia	Richmond	Northern Lights	360
Washington	Aberdeen	Permafrost	200
INTERNATIONAL			
Canada	Quebec City Vancouver Island	Girl Scout Cookies Blueberry	C\$160 140
England	London	Diesel	£400

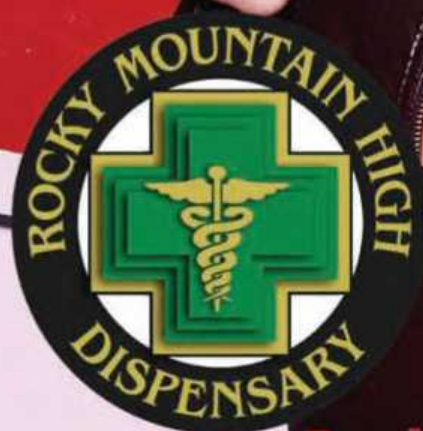
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1



3



2



4

Hot Products

What's new for cannabis cultivators and connoisseurs.

1 All In

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tokerpoker.com

Wouldn't it be nice to have everything you need to smoke a bowl in the palm of your hand? The new Toker Poker is an ergonomic lighter sleeve that holds 5 feet of Hempwick; the stainless-steel poker folds into the unit and the tamper keeps your fingers clean. Its creators call it "the ultimate, all-inclusive smoker's tool," and you'll quickly see why. Plus the Toker Poker can even be customized with your business logo.

2 Store and Protect

\$24.99, 3-inch mini; \$29.99, 6-inch large; \$49.99, bucket lid
herbsafe.net

Keeping your pot stashed away while maintaining quality and potency isn't easy. That's why we love the new stainless-steel HerbSafe: just snap on the BPA-free polypropylene lid (with silicone seal) and the aeration system provides the perfect cure, allowing gases to escape without letting in light, moisture or air. This is the future of storage—and for growers, and there's a lid that fits buckets perfectly.

3 Induction Vape

\$299

evokevape.com

Ever wonder about the next step in vaporizer technology? Loto Labs has done what others thought impossible by creating the first induction-powered vape—and it fits in the palm of your hand! The Evoke Vaporizer generates a small magnetic field that heats a metallic coil to the desired temperature without touching it, providing flavorful hits every time because it can't overheat your flowers or concentrate.

4 Roach Clip 2.0

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theaxis2000.com

Nothing's worse than hitting a joint and getting burned or covered in resin. The new Axis 2000 Smoking System eliminates that problem completely with the latest in roach-clip technology: The clip holds your joint firmly, allowing you to toke freely through the tube. It comes complete with a brass carrying case and cleaning rod, as well as a storage case and instructions.

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A walking Big Bud strolled the Cup.

NorCal Knockout

High Times celebrates the best of the best in the City by the Bay.

By Mike Hughes

California has a long and proud tradition as an enclave for progressive thinking—particularly about pot. It is, after all, the birthplace of the modern medical marijuana movement. And San Francisco is the epicenter of that movement. It was in San Francisco, nearly 20 years ago, that activists led by Dennis Peron crafted Proposition 215—the ballot initiative that made California the first state to legalize medical cannabis.

High Times chose San Francisco as the site of the first Medical Cannabis Cup in 2010. The success of that first state-side Cup led to High Times events in other states across the country that had followed California's lead and legalized medical pot.

In recent years, the annual NorCal Cup was held outside San Francisco in nearby Richmond, and then further north in



Thousands of NorCal pot fans waited for the Cow Palace to open the corral.

Santa Rosa. So it was with great pride and anticipation that High Times returned, after a three-year absence, to San Francisco—back where it all began.

The excitement was palpable outside the legendary Cow Palace as gates opened on day one of the 2015 NorCal Cup. Upon entering the medicating area, attendees were overwhelmed with good vibes and giveaways from over 400 cannabis businesses repping everything from pot-infused dog biscuits to cannabis kombucha (presumably for humans).

Crown OG erected a massive performance space that featured stoner faves Smoke DZA and Curren\$, while Vader Extracts kept the party going on the other side of the expo with acts like Fortunate Youth and Lil' Debbie, and a t-shirt gun that fired goodies into the thoroughly medicated crowd.



Pot model Sarah Jain demonstrated her dabbing skills.



1 “I see all these new amazing things. New products, new processes—I’m just floored by the innovation that’s going on.”
—Steve DeAngelo

2 Steve DeAngelo was honored for a lifetime of achievement.

3 Playmate of the Year Dani Matthers met fans at the Honey Pot booth.

4 Medco Green showcased an array of strains.

5 Greenwolf Los Angeles shared a peaceful, smoking firearm with attendees.

6 A giant smoking jay greeted stoners at the Gummi Cares booth.

Other creative vendors pushed the envelope with new cultivation and extraction techniques. Harborside’s Steve DeAngelo was impressed: “There was a time I thought I knew almost everything there was to know about cannabis and I just sit here for an hour and I see all these new amazing things. New products, new processes—I’m just floored by the innovation that’s going on.”

Inside the Cow Palace, attendees found a more serene scene including a trippy art gallery put together by MAPS, as well as activism-information booths. On Saturday, the seminar stage featured talks from grow guru Jorge Cervantes on his latest work, *The Cannabis Encyclopedia*, NORML Women’s Alliance on the future of legalization in California and High Times’ own Elise McDonough on integrating cannabis into a healthy diet.



DAN SKYE (6), THE CAECZAR

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Steel Pulse took the Cow Palace stage at the Saturday night Cup concert.



As the sun began to set on day one of the NorCal Cup, attendees and vendors alike made their way to the Cow Palace arena to check out legendary reggae band Steel Pulse. Despite inflamed vocal chords and a doctor-recommended vocal rest, lead singer David Hinds valiantly powered through a high-energy set. The nine-piece roots reggae outfit ended up with hundreds of backup vocalists after encouraging the crowd to help Hinds out and sing along. And while security did attempt to enforce an indoor smoking ban, the audience somehow managed to remain medicated as Steel Pulse closed out opening day of the Cup.

On Sunday, a thick fog crept over San Bruno Mountain and threatened to envelop the Cow Palace before burning off and giving way to a typically gorgeous Bay Area summer day.

While day two of the Cup may have been a slightly less raucous affair, the medicating area was once again packed as attendees lined up outside of epic booths like Cookies SF family and Caviar Gold's elaborate double-decker, which offered a unique view of the expo. Curious patients learned about the powerful medicine made by Gummi Cares and the award-winning genetics displayed by 3rd Gen Family. The Consortium, which housed a number of stoner wares,

Dani Fox Green graced the mid-way with a bud.



Guest artist David Elecciri, Jr. (aka Cirious) revved up the crowd.



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The Vader Extracts stage was a giveaway extravaganza!



Chris Conrad, Dale Sky Jones and Dale Gieringer pumped California legalization.



Best Indica was won by 3rd Generation Family.

boasted one of the more creative booth designs with a giant joint spewing smoke high above the crowd and, as a special treat, Playboy Playmate of the Year Dani Mathers was on hand with Honey Pot to extol the virtues of their cannabis infused products.

The High Times VIP section proved an oasis in the midst of the medicating area, where laidback stoners were invited to chill and play Xbox, take in some standup comedy (thanks, Rob Cantrell!) and even learn how to roll the perfect joint from senior cultivation editor Danny Danko.

Meanwhile, in the seminar space, California NORML's Dale Gieringer gave a talk on statewide legalization, High Times managing editor Jen Bernstein hosted a panel on starting a career in the cannabis industry, and activist extraordinaire Valerie Corral of WAMM presented a discussion on the future of medical marijuana.

As day two of the Cup drew to a close, it was time to honor the best pot, hash and edibles in Northern California. Expert judges spent weeks testing entries in 12 categories and High Times was thrilled to call the winners up to the Cow Palace stage—where seminal acts like the Grateful Dead and The Beatles once played—to receive their Cannabis Cups. In addition to honoring the best entries, High Times also awarded activist, entrepreneur and hometown hero Steve DeAngelo with the Lester Grinspoon Lifetime Achievement Award.

Here are all the winners from the 2015 NorCal Medical Cannabis Cup...

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Cannabis Cup Results

Best Sativa

- 1st Place: Schlemons by The Source Genetics
- 2nd Place: Super Silver Haze by Life is Good
- 3rd Place: Super Glue by Vallejo Patients Care

Best Indica

- 1st Place: Zkittles by 3rd Gen Family
- 2nd Place: Kosher Kush from DNA by Greenwolf Los Angeles & Cali Kush Farms
- 3rd Place: 24K OG Kush by Strain Collective with Pearl Pharma

Best Hybrid

- 1st Place: Orange Crush by Cannabiotix
- 2nd Place: Tahoe Chem by C.R.A.F.T.
- 3rd Place: Chiquita Banana by Utopia Meds - Santa Cruz

Best CBD Flowers

- 1st Place: CBD OG by C.R.A.F.T.
- 2nd Place: Doctor Cookies by Northstar Holistic Collective

- 3rd Place: Sunkiss CBD by California Growers Guild

Best CBD Concentrate

- 1st Place: Goji D.C. Live Resin by Moxie Genetics
- 2nd Place: AC/DC by Scapegoat Genetics with Str8organics
- 3rd Place: AC/DC by Dankman Extrax

Best Non-Solvent Hash

- 1st Place: Kimbo Kush Cubantech Drysift by Cubanhashqueen with Exotic Genetix
- 2nd Place: Cookies & Cream Cubantech Drysift by Exotic Genetix
- 3rd Place: Peaches N Cream by Full Flava Extracts with E.T. Extracts

Best Sativa Concentrate

- 1st Place: Citrix #4 by Gold

- Coast Collection with Apothecary 420

- 2nd Place: Purple Tangle by Zeinstein Gardens & Loudpack Extracts
- 3rd Place: Double Tangle Banana by Crockett Family Farms

Best Indica Concentrate

- 1st Place: AHHS Brand OG by Alternative Herbal Health Services
- 2nd Place: Banana OG by Crockett Family Farms
- 3rd Place: Crown OG Live Resin by Prime Extractions

Best Hybrid Concentrate

- 1st Place: Emperors Mandarins "Shatter" by The Kind Center with Unregistered Extracts
- 2nd Place: Emperors Mandarins by Greenwolf Collective x Cali Kush Farms

- 3rd Place: Crown O.G. x Dab Vader O.G. Zombie Resin by Crown Genetics

Best Product

- 1st Place: Droid E-Nail / @PIGPEN710
- 2nd Place: Caviar Gold / Caviar Gold Meds
- 3rd Place: Moxie Mix / Moxie

Best Booth

- 1st Place: Vader / Greenwolf / Paris
- 2nd Place: Delta 9
- 3rd Place: Caviar Gold

Best Glass

- 1st Place: Nexus Glass / Nexus Glass
- 2nd Place: Hitman Glass / Hitman Glass
- 3rd Place: Elevations Glass / Slugworth Illuminati

Best Vaporizer

- 1st Place: Delta Vape / Delta 9 Products
- 2nd Place: 710 KingPen
- 3rd Place: Trippy Stix

Best Topical

- 1st Place: Crown O.G. "It's The Balm Healing Salve" by Crown Genetics
- 2nd Place: Honey Pot Bear Butter by Honey Pot with Pure Joy Collective
- 3rd Place: Absorb CBD Topical Relief by Absorb with The Seasonal Apothecary

Best Edible

- 1st Place: Dark Chocolate Macarons by Utopia Meds
- 2nd Place: Pineapple Delight Bites by Lifted Edibles
- 3rd Place: Cinnamon Maple Tree Hugger - Om Edibles & Gold Drop

Best CBD Edibles

- 1st Place: Raw CBD Sipping Cacao by Om Edibles All Female Collective
- 2nd Place: Beezle's CBD Brulee - Chocolate Orange by Beezle Extracts
- 3rd Place: CBD/THC Honey by Baked Beez w/ The W.E.E.D. Studio City

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HIGH TIMES **Pot Jobs 2015 Report**

The increase in legalized medical and recreational pot means more ways to earn a living in the cannabis industry. Here's how. *By Emma Johnson*

When the Brookings Institution, the elite think tank with an address on Embassy Row in Washington, DC, advises college grads to get into the cannabis industry, the paradigm shift has officially occurred.

John Hudak, a fellow at Brookings who studied Colorado's legalization of the plant, noted the job opportunities that the industry presents to younger workers. "That can be a real economic positive in a state trying to find jobs for young people," he told Bloomberg Business, "and for an industry that doesn't require a college degree to do a job or extensive training except for higher agriculture." Indeed, starting wages in Colorado's cannabis industry average \$10 per hour—25 percent higher than the state minimum wage of \$8.

In its short but heady history, the legal cannabis industry has been booming. According to WeedHire, a leading site for cannabis jobseekers, the industry has developed a more solid footing—as seen in the number of high-paying jobs available. "There is a process that happens," says WeedHire CEO David Bernstein. "First, legislation is passed. Then, licenses are issued, businesses are formed—which is followed by growth in manufacturing, retail and marketing." This cycle typically takes 18 to 24 months, he adds, so he would like to see states like Illinois tracking this arc. Since medical marijuana licenses were first issued there in January, Bernstein estimates that "next summer, there will be thousands of jobs generated" in the state.

While there's been an especially notable surge in jobs directly involved in the cannabis industry (see the sidebar), many other industries will benefit from increased marijuana legalization, says Robert Calkin, the CEO and founder of the career site Cannajobs and the Cannabis Career Institute, and the owner since 1988 of Green Dot Guy, a medical marijuana delivery service in Los Angeles. "Cannabis is creating jobs in every sector of the US economy," he adds. "Advertising, publishing, accounting—you name it, it

has been affected by cannabis."

Take, for example, real estate. The services of traditional commercial brokers and attorneys, as well as builders, contractors and ancillary construction, are all required to build growhouses, dispensaries, manufacturing facilities, and retail spaces that are both efficient and legally compliant—and all of these services require highly specialized skill sets that few people have, Bernstein points out.

Another leading indicator: Suddenly, the marketplace is seeing cannabis professionals openly marketing their expertise—which they may have developed over the course of decades but kept on the down-low until recently. "In the past, no one was listing that they were a medical marijuana lawyer in the phone book," Calkin says. "But today, for the first time, people will openly tell you they've been working in the industry all their lives."

The experts interviewed for this article say that jobseekers looking to start a career in the legal cannabis industry benefit from having firsthand experience and a passion for the product—even if that experience comes from black-market activity. At the same time, the surge in education for all aspects of weed production—from growing to sales and marketing—means that formal degrees and certificates tend to move a résumé higher on the stack.

A handful of private startups are offering a variety of courses—both in-person and virtual—on the ins and outs of starting and running a cannabis business, including regulation, marketing, horticulture and manufacturing. Leaders in this area include Oaksterdam University, 420 College, Medical Marijuana Tampa, the Cannabis Career Institute, and Clover Leaf University, which made headlines a few years back when it received state approval from the Colorado Department of Higher Education. Courses at these places start at a few hundred dollars and go into the thousands. On the academic side, law schools like Vanderbilt University, Santa Clara University and the University of Denver all offer courses related to marijuana and the law.



Because of these formal educational opportunities, the requirements for landing a job in the legal cannabis industry are increasingly stiff, Bernstein warns: "The pay scale is way above average, but the expectations are much higher too." For example, the operations-supervisor positions listed on WeedHire range from \$59,028 to \$85,023, while the national average for that job is just \$53,677, according to *Glassdoor.com*. More than half of WeedHire's postings pay between \$30,000 and \$50,000, while the median net wages for a US worker was just over \$28,000, according to the Social Security Administration.

That's because many employers in the industry are seeking high-quality workers. "Business owners are willing to pay more for people who will stay with them longer, who they can trust," Bernstein says. These workers will be "dealing with product every day," so employers "can't afford to be reckless and hire someone who is going to sell the product out the back door."



Robert Wood, master grower

Cannabusiness Success Stories

These four people have created successful careers in the legal marijuana industry. Here are their personal stories—and some insider advice for those looking to follow in their footsteps:

Robert Wood, 40

Master grower, Greenleaf Compassionate Care Center, Inc., Portsmouth, Rhode Island

Duties: Oversees a staff of 14 and provides 30 types of medical products to the center. Responsibilities include maintaining the physical facility, planting and cultivation, and hiring and managing. “It’s a lot of responsibility,” he says. “If you ruin a \$250,00 grow, you eat it.”

Favorite part of job: “I love the plants, bringing to life something that wasn’t there before. And helping people.”

Least favorite part of job: Regulation. “The laws are constantly changing, and that can make it hard to operate.”

Career path: Wood, who grew up in Virginia, earned a bachelor’s degree in business administration from Old Dominion University before joining his family’s neon-sign business. He also worked as a licensed HVAC technician. “That’s a big part of my résumé,” he says of his expertise in environmental controls. “It’s a very hard skill to do well, but it’s critical to any build-out” for cannabis cultivation.

He got his foot in the door at Greenleaf doing HVAC work; combined with his long history of cannabis growing for personal recreational use, this earned him a staff position and, later, the coveted title of “master grower.” For the past year and a half, he and his wife have also run a cannabis co-op that contracts with Greenleaf.

Career advice to others: Wood says that college degrees in botany and related subjects do help put résumés at the top of the list, but nothing beats having first-hand knowledge of how to grow buds: “No college degree is going to teach you what we do, so you have to be willing to say you grew underground.” For those interested in a career as a master grower, Wood recommends getting a position at a compassion center—including entry-level jobs like sales—and then working your way up.

“We need people who are enthusiastic about the plant,” he says. “But don’t be a total pothead and show up in a Bob Marley T-shirt with a vape pen in your pocket. You have to show up on time and be professional. It’s a fine line: be a professional pothead.”



Tim Anderson purchases cannabis for Harborside.

Tim Anderson, 39

Purchasing manager, Harborside Health Center, with locations in Oakland and San Jose, California

Duties: Anderson oversees a staff of four and is responsible for the center's purchase and distribution of hundreds of products, including flowers, concentrates and edibles.

Favorite part of job: The variety of tasks. "I see every product and technology that

comes to this market—and I meet every type of person," from the youthful startup entrepreneur to "some old guy who came out of the wilderness to sell us some strain he's been messing around with for 40 years," Anderson says.

Least favorite part of job: The pace can be grueling—"like working the line in a busy restaurant."

Career path: Raised in Minnesota,

Anderson spent time with his farmer grandparents and became fascinated with marijuana at an early age. "Cannabis is very well suited for my personal psychology," he says. Starting in college, where he majored in English, Anderson grew pot for his own personal use and, after a stint as a journalist, moved to Southern California, where a childhood friend who owned a growhouse offered him a job selling the finished product to dispensaries. That started a lifelong obsession with geeking out on the plant: His nonworking hours were spent reading old issues of *High Times*, seed catalogs, and books on marijuana and its history, as well as trying every strain he could find. "I put myself through the proverbial School of Cannabis," Anderson says.

After seven years working in the underground, he decided to go legit and landed a front-desk job at Harborside, one of the places he'd sold to in his previous gig. "Even though I was overqualified, interacting with the public—and patience—was a critical starting point for me to acquire consciousness of the holistic approach to wellness," he says of his entry-level job. He was quickly promoted to purchasing manager.

Career advice to others: "Take your time and truly educate yourself about the history and science of cannabis," Anderson says. "A vast reservoir of knowledge will give you the confidence to succeed in this industry."

Kori Knoesel, 34

Director of marketing for Patients Choice of Colorado and Livegreen Cannabis

Duties: In her new role, Knoesel is responsible for all aspects of her company's marketing efforts in promoting and growing its two brands—one focused on recreational cannabis use, and the other, older brand engaged with patient consumption. Her daily duties include maintenance of business listings, networking with professional associations, designing and implementing a social media strategy and helping her company position itself among competing cannabis brands. "I touch all sides of the business in some way, even if the focus is always on marketing," says Knoesel.

Favorite part of job: "The creative aspect of thinking through new ways to bring the brand to people who may be stuck on stigmas associated with cannabis," she says.



Kori Knoesel applied her marketing skills to the cannabis industry.

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Least favorite part of job: “Sometimes it’s frustrating when people still think marijuana is bad for society and creates chaos and crime,” Knoesel says. “It’s hard not to take that personally.”

Career path: Knoesel, an Ohio native, has worked in marketing for 12 years – first for a nurse staffing agency, then for a regional bank in Oklahoma, and later to Phoenix, Ariz., where for the past three years she was a project manager at a marketing agency, working with high tech, non-profit and education clients.

Knoesel is a childhood friend of Brooke Gehring, CEO of Patients Choice of Colorado and prominent voice in the legalization movement. “I’ve known Brooke since we were 7 years old, and over the years I was right there following her work and watching her advance,” says Knoesel. “The industry is so interesting and exciting. I’ve always been passionate about marketing, and wanted to apply that to the cannabis industry.” In June, 2015 she was hired by Patients Choice and moved to Denver.

“If you can show you grew your own brand, a cannabis brand will understand that you can do it for them too.”

Career advice to others: For a career in marketing in the cannabis industry, there are several paths. For those starting a marketing career anew, consider getting an entry-level position with a business in the industry. “If you can articulate the products and strains, and show it, you can rise to be a brand ambassador for your company,” Knoesel says. Retail sales jobs are especially primed for this career path.

Alternatively, a traditional marketing background will teach you the basics of the job. Look for small agencies where you can learn a lot quickly, or in-house marketing departments of larger firms to gain experience.

Another way to showcase your passion for the industry and acquire marketing skills is to start your own social media brand, combining blogging, video, podcasting and social media. “If you can show that you grew your own brand, a cannabis brand will understand that you can do it for them, too.”

Tips for Landing a Job in the Weed Industry

Be willing to start at the bottom.

If they don’t have specialized skills, many people get a foot in the door as trimmers or in a retail sales capacity.

Know the product.

A passion for cannabis and an understanding of the terminology and the consumer culture are assets.

Be professional.

Stalk the law.

Legislation and regulations are changing constantly and vary from state to state. This information is critical to cannabis business owners and workers.

Combine academics with real-world experience.

such as a horticulture degree along with growhouse experience.

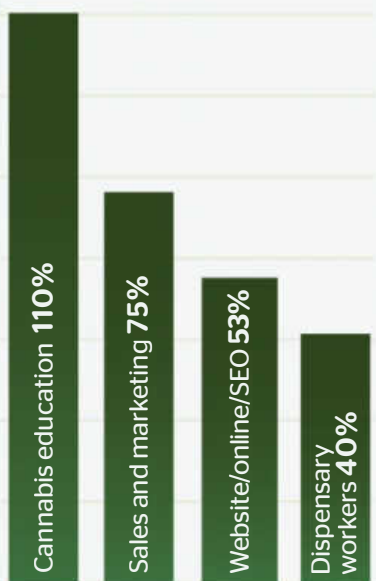
Think outside the box.

Ancillary businesses such as marketing, accounting, packaging, water filtration, design and manufacturing are all enjoying increased opportunities thanks to the cannabis industry’s growth.

Network.

Whether it’s through your social circles, the cannabis classes or school you’re attending, or industry events and conferences, you need to get advice and connect with others in the field.

First Quarter (Q1) 2015 Job Growth



Top 5 In-Demand Skills



1. Sales and marketing

2. Administrative

3. Dispensary-related

4. Medical

5. Manufacturing/
growing/edibles

A Native American permit means big job growth for everyone.

Federal law has been changed to allow Native American tribes to grow marijuana on their territories in states where the practice is legal. Experts expect this to be a boon for jobseekers and entrepreneurs alike. “This could easily generate 100,000 new jobs within a few years,” says *WeedHire.com*’s David Bernstein.

Experts point to the economic impact that legalized gambling on reservations has had for entire communities. According to the National Indian Gaming Commission, since Native American tribes began opening casinos in the late 1970s, the industry has grown to generate some \$28 billion in annual revenue and to employ more than 612,000 people. It also pays in excess of \$9 billion in local, state and federal taxes.

In March, several tribes joined the newly formed National Indian Cannabis Coalition, which seeks to educate its membership and promote the industry. All eyes are on the 2016 presidential election to see if it will bring about changes to the country’s cannabis laws overall, including those affecting Native American territories.

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Brett Albanese, 29

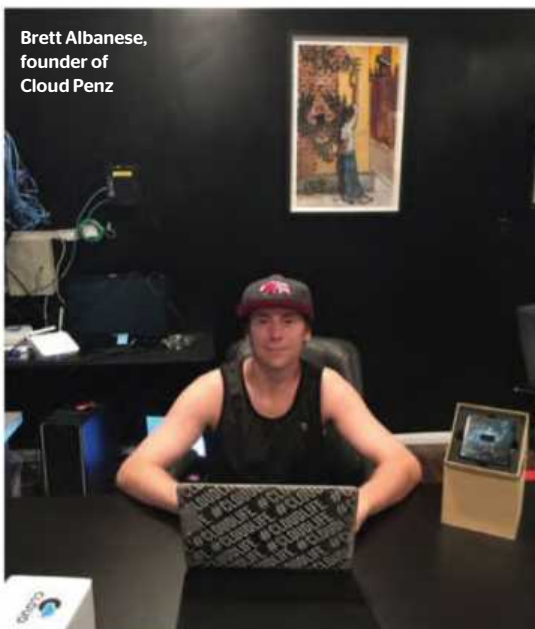
Founder and CEO of Full Circle Enterprises in Los Angeles, which owns Cloud Penz vaporizers, Mr. Greenthumb (a maker of premium glass products that was co-founded by B-Real from Cypress Hill), and glass distribution and manufacturing companies. Albanese's goal for 2015 is to hit \$20 million in sales.

Duties: Starting, buying and running cannabis-related businesses; managing some 20 employees.

Favorite part of the job: "I love running the business. I have a great team, and every day I get to do what I dreamed of doing when I was a kid: traveling around and meeting awesome people," Albanese says.

Least favorite part of the job: "I'm not a numbers person, so I hired an accountant and business manager to take care of that part."

Career path: Albanese started selling weed as a teenager in Pasadena and then, at the age of 17, got a medical marijuana license from the state of California. He immersed himself in the industry, learning about the law and business and, in 2012, opening up



Brett Albanese,
founder of
Cloud Penz

his first dispensary. "I was always selling weed, and as the laws changed, I made an effort to go legit," Albanese says. "I still have friends who are hustling, and that's a dead-end road—the margins don't outweigh the risk."

In 2012, he opened a few more dispensaries, first in Los Angeles County

and then in Orange County, before the local laws changed and he was forced out of business. That was when Albanese decided to launch Cloud Penz.

Career advice to others:

Work hard, don't overspend on marketing, and develop a reputation for reliability and consistency. As Albanese puts it: "Be good people; be about what you say. There are not too many people in this industry willing to put in the hard work that gets results. If you find those people, keep those relationships." ✨

Emma Johnson is an award-winning business journalist whose credits include the New

York Times, Wall Street Journal, Men's Health, Forbes, Glamour and dozens of others. She is founder of WealthySingle-Mommy.com, and the podcast "Like a Mother with Emma Johnson," both of which speak to professional women about money, parenting, dating and sex. Emma lives in New York City with her two young children.

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Weight: 28lbs

Actual Wattage: 450w, 120-240v

HID Wattage Equivalent: 750w

Total Diodes: 208

Footprint: 4'x4'

Infrared/Ultraviolet Diodes: Yes

XL1000



Dimensions: 26"x20"x3.5"

Weight: 36lbs

Actual Wattage: 650w, 120-240v

HID Wattage Equivalent: 1000w

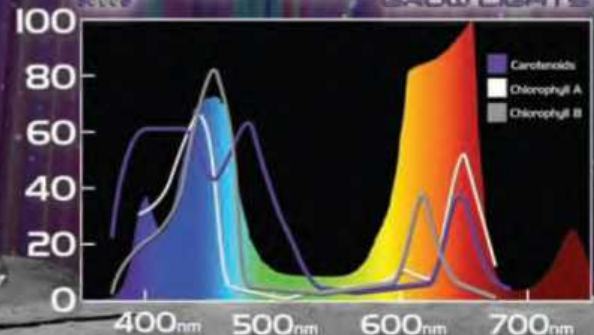
Total Diodes: 320

Footprint: 5'x5'

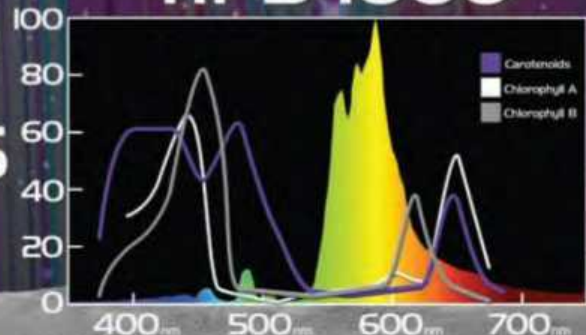
Infrared/Ultraviolet Diodes: Yes



HPS 1000



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The Ultimate Cannabutter Experiment

We put four popular infusion techniques to the test, then sent the results to two separate labs to determine, once and for all, how well each method works. *By Elise McDonough*

Cannabutter is the traditional basis for marijuana cookery. Once you infuse butter with THC, you can add it to any number of recipes to make them magically delicious. Naturally, every cannabis chef and home cook believes that her method for making cannabutter works best. As the author of *The Official High Times Cannabis Cookbook*, I've been approached by people touting dozens of different recipes for the "ultimate cannabutter," each promising to produce the most potent, tasteless, scentless product possible. I've tried many of these recipes at home myself, and they do work. But how well do they work, exactly? To find out,

There are many methods for creating potent cannabutter.





The Crock-Pot is a favorite tool of cannabis chefs.

I took butters into my own hands by testing the four top methods side by side using the same basic ingredients in each batch. Aiming to dispel the myths and make with the science, I enlisted two dedicated cannabis-testing laboratories to analyze the finished samples, using high-pressure liquid chromatography to determine their respective cannabinoid profiles. The analysis would reveal which of these methods is the most efficient at using heat to convert THCA (tetrahydrocannabinolic acid, the non-psychoactive form found in raw marijuana) into psychoactive THC, giving you the most bang for your buck and ensuring that none of your precious weed goes to waste. Decarboxylation, either through heating or drying, is the chemical reaction that converts THCA into THC. The boiling temperature for THC is 314°F, and heating your cannabis too high for too long will result in lowered potency, as the THC converts into CBN or is destroyed completely. Heating your herb at 240°F for an hour will decarb your cannabis so that it's ready to use in an infusion.

The Experiment

Using half an ounce of the same cannabis strain and eight ounces of clarified butter as our ingredients, we tested four different methods suggested to us by well-known cannabis cooks, and then had the finished butters analyzed by two laboratories in California: SC Labs and Steep Hill. The results revealed how much THCA remained in the butter, indicating the potential THC that was not successfully activated, along with other useful information.

The Ultimate Cannabutter Experiment was performed twice, with a different type of cannabis used for each batch, making a total of eight butter samples. The two participating labs analyzed each batch along with the cannabis used, allowing us to confirm trends by comparing the data sets. Colin Hennigan, a clinical data manager, provided scientific consultation and data interpretation for this project.

The Methods

1) Scientific Cannabutter

Preparation time: 8 hours

Equipment: Oven, Crock-Pot, spray bottle

Secret weapon: Everclear

Our first method was developed by Tamar Wise, the chief science officer at Nutrawerx, a cannabinoid nutraceutical company. Tamar's method is unique in using Everclear alcohol to help break down cellulose in the plant material, enabling cannabinoids to migrate more easily into the lipids. To make her Scientific Cannabutter, first toast the cannabis trim in the oven for an hour at 240°F, then cool it and spray with Everclear. Simmer the half-ounce of decarbed trim in eight ounces of clarified butter in a Crock-Pot for six hours before removing and straining.



Lecithin increases the bioavailability of THC.

2) Bioavailable Cannabutter

Preparation time: 9 hours

Equipment: Oven, freezer, Pyrex pie pan, aluminum foil

Secret weapon: Lecithin

Kat Smiles from BadKat's CannaPharm, a popular online resource for cannabis cooks, developed our second method. In order to increase the bioavailability of THC, Kat includes an emulsifier called lecithin with her infusion. Though adding lecithin doesn't result in extra potency that a lab can measure, the concept of "bioavailability" means that the same amount of THC will feel more potent in your body. Kat's method decarbs the trim in the oven at 220°F for 20 minutes, followed by adding the lecithin and clarified butter and returning it to the oven for 90 minutes, then freezing, thawing and straining the resulting butter.

How to Make the Ultimate Cannabutter

The Recipe for Scientific Cannabutter, a.k.a. Method #1



This method uses simple equipment.

Ingredients:

1/2 oz. flowers

1 oz. Everclear alcohol in a spray bottle

8 oz. clarified butter

1. Preheat the oven to 240 F.
2. Grind your flowers down in a blender or food processor. Spread the ground flowers evenly on the bottom of a sheet pan and place on the middle rack of an oven.
3. Bake for an hour, stirring once halfway through. Make sure the flowers are evenly spread.



Spray the toasted cannabis with Everclear.

4. Take the pan out of the oven and allow to cool for 10 minutes. Meanwhile, using the spray bottle, spray a fine mist of Everclear alcohol all over the toasted flowers. This helps to break down the cellulose a bit, allowing for a less-green infusion color. If you don't have a spray bottle, you can simply use a teaspoon and sprinkle the Everclear on the flowers while stirring with a spoon.
5. Let the flowers sit for 10 to 15 minutes. Meanwhile, begin melting your butter over low heat. Since we've already decarboxylated the butter, it only needs to be hot enough to extract the cannabinoids. For this reason, a slow simmer is good. Spoon the flowers into the butter and stir. Extract using a Crock-Pot set on low for six hours, and stir every hour or so to prevent burning.
6. Once your infusion is done, turn off the heat and let the cannabutter cool for at least 20 minutes.



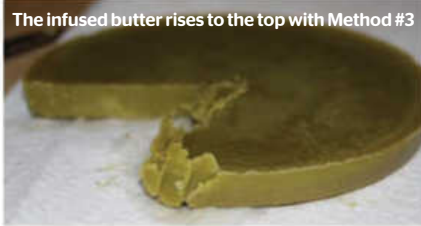
Squeeze the cheesecloth to wring out the cannabutter.

7. Line a metal strainer with cheesecloth. Pour the butter through the cheesecloth and use a spoon to press all the infused butter out.
8. Now your cannabutter is ready to be used in recipes! Keep it in the fridge and use within two weeks.



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3) Water-Simmered Cannabutter
Preparation time: 5 hours
Equipment: Stovetop, stockpot, fridge
Secret weapon: Simplicity
 Our third method is brought to you by chef Laurie Wolf and was praised by “The Cannabist” as the best cannabutter in America. This is a version of the traditional and popular infusion method, whereby the cannabis is simmered in water with butter, then chilled to allow the infused fat to rise to the top.



4) Scentless Cannabutter
Preparation time: 6 hours
Equipment: Oven, electric kettle, French press, tea ball
Secret weapon: Blanching
 For the fourth method, we’ve chosen a supposedly scentless and flavorless technique that was developed by Jeff the 420 Chef. This ingenious method involves blanching the buds in boiling water before drying them in the oven, then creating your infusion in a French press set into a boiling electric kettle. While many people do like the flavor of cannabis, it’s more appropriate to use in recipes with other bold flavors.

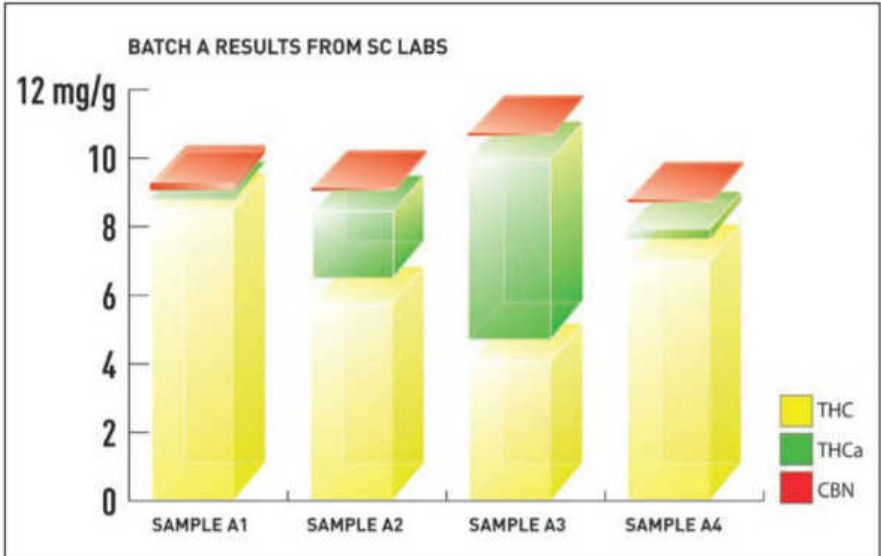


Table #1: Batch A Cannabutter, made with Nepalese Shake. Cannabinoid Test Results from SC Labs

Cannabinoid	Flowers (%)	Method #1 (mg/g)	Method #2 (mg/g)	Method #3 (mg/g)	Method #4 (mg/g)
Delta-9THC	4.82	9.58	6.84	5.18	8.08
THCa	11.84	0.14	3.03	6.22	1.38
THC Total	16.66	9.72	9.88	11.39	9.46
CBN Total	0.58	0.66	0.37	0.45	0.35

Table #2: Batch A, made with Nepalese Shake. Cannabinoid Test Results from Steep Hill Halent

Cannabinoid	Flowers (%)	Method #1 (mg/g)	Method #2 (mg/g)	Method #3 (mg/g)	Method #4 (mg/g)
Delta-9THC	4.6	11	7.0	5.0	8.8
THCa	12	0	2.8	6.9	1.3
THC Total	17	11	9.9	12.0	10.3
CBN Total	0.91	0.80	0.51	0.68	0.55

The Results

Across the board, the lab results from SC Labs and Steep Hill closely mirrored each other, confirming the validity of the experiment and providing us with evidence of consistent results from each cannabutter method. The data presented here has been condensed for space, but complete data sets, additional charts and complete recipes are available online.

Batch A used old cannabis shake from a harvest of Nepalese several years earlier, and the profile results from SC Labs and Steep Hill came back nearly identical: SC Labs reported 4.82% THC, 11.84% THCA and 0.58% CBN, while Steep Hill found 4.6% THC, 12% THCA and 0.91% CBN.

1) Scientific Cannabutter

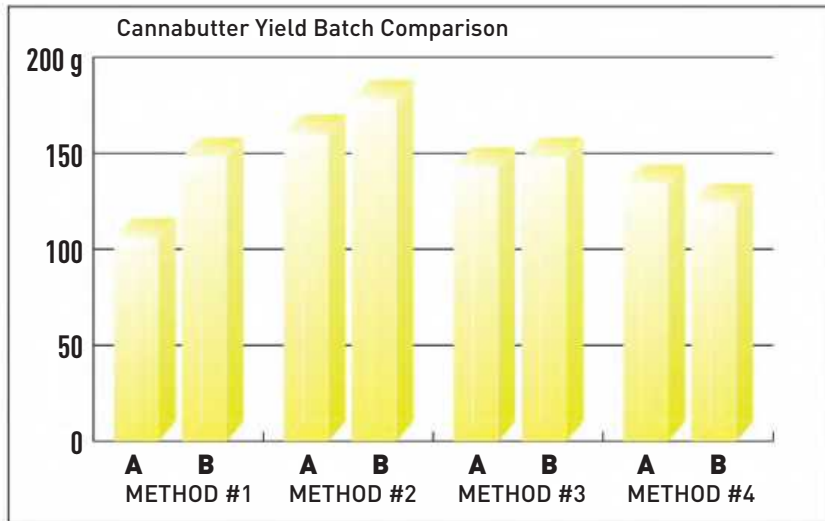
THC: 9.58 milligrams per gram (mg/g)
THCA: 0.14 mg/g
CBN: 0.8 mg/g
Yield: 116 grams

The Scientific Cannabutter, a.k.a. Method #1, appears to be the most efficient in this trial, with SC Labs reporting 9.58 mg/g THC and a negligible 0.14 mg/g THCA. Levels of CBN were the highest with this method at 0.66 mg/g. Steep Hill confirmed this trend, reporting 11 mg/g THC, 0 mg/g THCA and 0.8 mg/g CBN. To reduce the CBN levels, I’d recommend cutting the simmering time to four or five hours in the crockpot. My yield for Batch A was the lowest of the bunch—perhaps too much butter remained in the cheesecloth and wasn’t squeezed enough? Batch B yielded on par with the other butters.

2) Bioavailable Cannabutter

THC: 6.84 mg/g
THCA: 3.03 mg/g
CBN: 0.37 mg/g
Yield: 170 grams

The Bioavailable Cannabutter left more THCA behind than I was expecting, at 3.03 mg/g and only 6.84 mg/g THC—but some patients like THCA for its medicinal properties. I’d recommend increasing the time for the first toasting step from 20 minutes to one hour to see if THC levels increase, along with raising the oven temp from 220°F to 240°F.



3) Water-Simmered Cannabutter

THC: 5.18 mg/g
 THCA: 6.22 mg/g
 CBN: 0.45 mg/g
 Yield: 153 grams

The traditional favorite, Water-Simmered Cannabutter left the most THC inactive, with relatively high levels of THCA at 6.22 mg/g according to SC Labs, and 6.9 mg/g according to Steep Hill. THC potency lagged behind at about 5 mg/g. If you want more THCA than THC in your cannabutter, you should definitely use the water-simmering method—but for those of us who would like to increase the THC potency, toast your cannabis in the oven at 240°F for 60 minutes before simmering in water.

4) Scentless Cannabutter

THC: 8.08 mg/g
 THCA: 1.38 mg/g
 CBN: 0.35 mg/g
 Yield: 144 grams

Following close behind Method #1, Scentless Cannabutter returned rather favorable results, especially for a new technique using easy countertop technology. The butter wasn't quite scentless or tasteless, but it did have less of a pronounced flavor than the others. SC Labs reported 8.08 mg/g THC, with 1.38 mg/g THCA and 0.35 mg/g CBN. Steep Hill posted similar results: 8.8 mg/g THC, 1.3 mg/g THCA and 0.55 mg/g CBN. ✨

For the complete cannabutter recipes, a video demonstration, expanded discussion of the experimental results, and additional charts and graphs, please go to hightimes.com/ultimategcannabutter.

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The HyGroCage may revolutionize the world of hydro.

Goin' With the Ebb & Flow

The brain behind BUDS reveals the secrets to growing great ganja with HyGroCage, his simple yet highly effective hydro system. *Story & photos by Dan Skye*

It was October 1805 when Meriwether Lewis and William Clark came ashore on the banks of the Columbia River, the site of present-day Pasco, Washington. Their trek had begun nearly a year and a half earlier: President Thomas Jefferson commissioned the pair to lead the Corps of Discovery Expedition on an exploration of the territory acquired with the Louisiana Purchase, a vast, uncharted swath of land west of the Mississippi River. Jefferson also hoped that Lewis and Clark might find a water route to the Pacific Ocean.

After landing on the banks, the expedition purchased a few dogs for dinner from the friendly local Indians and then marveled at the clear water of the Columbia, where salmon could be “seen at a depth of 15 or 20 feet,” Clark noted.

When Lewis and Clark’s journey got underway, most citizens of the United States lived within 50 miles of the Atlantic Ocean. The western half of the continent was a great

unknown (at least to the European settlers), appearing on maps as “The Great Desert” and believed to be uninhabitable.

Two centuries ago, the Pasco region probably fit that assessment. The city of 60,000 is situated in the Columbia River Basin, a dry, windswept plain subject to hot summers and cold winters. Pasco receives less than seven inches of rain a year; the Cascade Range, to the west, blocks rain-producing weather systems. However, by the 1900s, irrigation projects enabled the area to expand its agricultural reach, spawning farms, orchards and vineyards. Today, the Columbia River Basin produces some of the world’s most highly prized wine grapes.

But not all of Pasco’s great farming happens outdoors.

In a cavernous, 12,000-square-foot industrial building, BUDS grows. BUDS stands for “Botany Unlimited Design & Supply.” And, yes, buds are growing here.





Top left to right: Mark Gomez ponders his plants; ebb-and-flow is also used for plants in veg.

Mark Gomez is the co-owner of BUDS, a state-licensed cannabis producer and processor that supplies its produce to more than 40 recreational pot shops statewide. His is an all-hydro operation, and Mark is an avid hydro grower—well, obsessed is probably the more accurate term.

BUDS's two signature strains are wildly popular. Blue Persuasion is an *indica*-dominant hybrid composed of Blueberry, Northern Lights and White Widow genetics, while Tembo Kush is a *sativa*-dominant hybrid combining Elephant, Durban Poison and OG Kush. The two strains have impressive THC levels—22.8 and 26.5 percent, respectively—and regularly sell out by the weekend, following BUDS's regular Friday delivery to retail stores.

As exhilarating as that success is, Mark's ebb-and-flow system is what truly excites him. He exudes the soaring enthusiasm of the born inventor, convinced that his innovation will profoundly change the world of cannabis cultivation for the better.

For example: "Dirt is not the problem—it's just the root of most problems in cannabis cultivation. It's one of the reasons for insects, high microbial results and slow growth rates. Overall, dirt is an inferior medium due to its poor aeration, poor water retention and poor air retention; what it does retain is insects, eggs, larvae and bugs. Simply put, it's dirty. My experience as a grower tells me that when you're dealing with dirt, you're dealing with all the symptoms of dirt. By getting rid of the dirt, you get rid of the source of most problems."

Mark says he's invested 25 years designing the HyGroCage, which he believes is the most efficient indoor hydroponics ebb-and-flow system possible—unique



Mark says the HyGroCage produces more weight in a shorter time with fewer lights, less labor and fewer materials.

Ten plants are assigned to each light, for a maximum count of 20 plants per cage. These form units called "racks," with each rack consisting of 10 lights in five cages.

enough that it's patent-pending.

"We don't use flood tables," he explains. "We use individual, true ebb-and-flow flood containers. Most people think ebb and flow is a method to water your plants, but they're wrong: Ebb-and-flow systems are designed to exchange the air in the medium. The entire root mass must be submerged underwater as the medium floods. This displaces all the used air in the roots, allowing fresh air to be sucked into them as the water drains out of the container. Most flood tables only allow about half of the root-ball to

be underwater—and having an open flood system allows too much moisture into the grow environment through evaporation. We exchange the air in our plants up to eight times a day. At that rate, a room with tables would be a sauna.

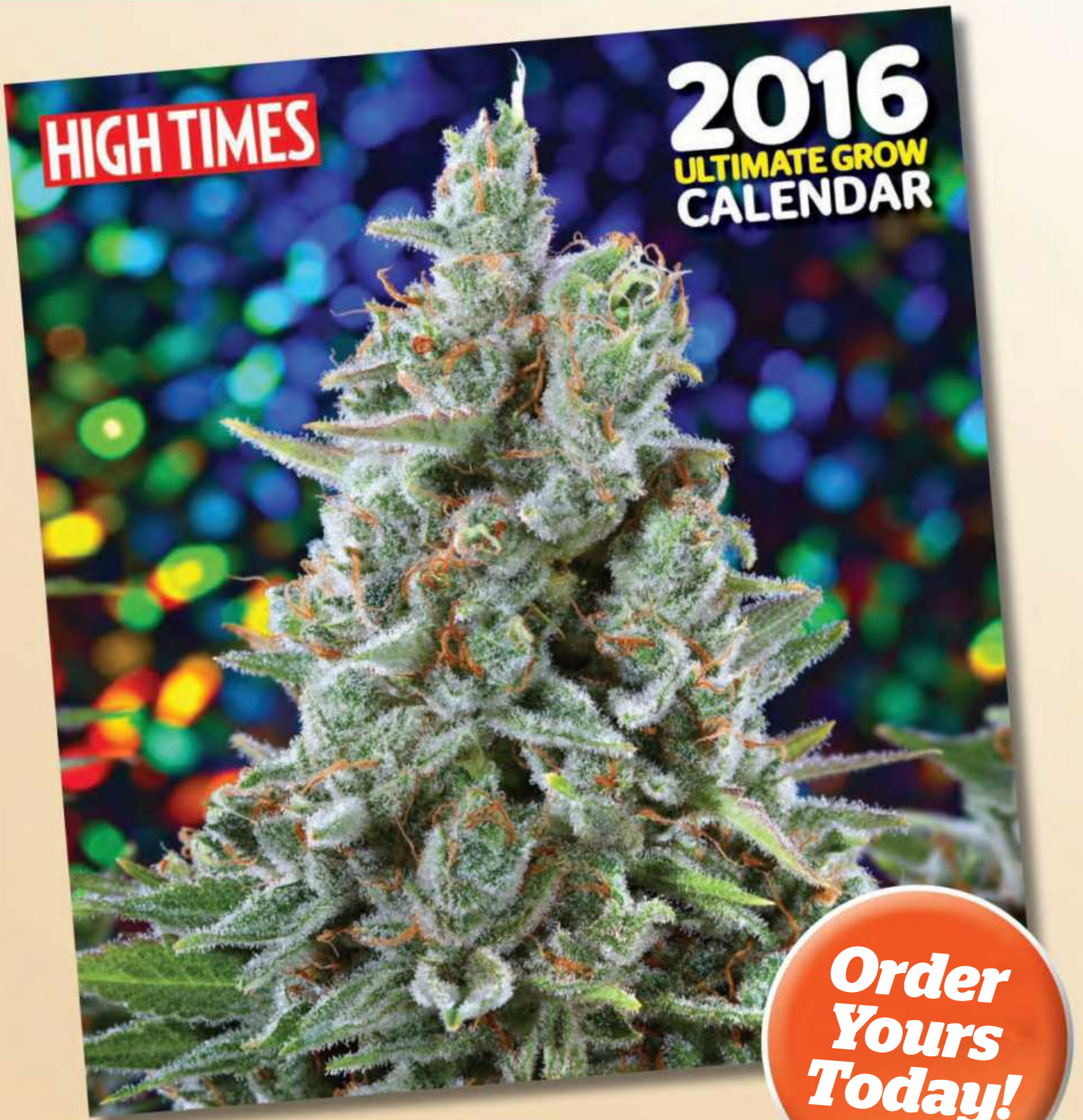
"Rockwool is our plant medium," he adds. "We use only one bottle of nutrients with no other amendments, and we're pesticide-free."

According to the grow gospel of Mark, the "cage" is what makes it happen. Each "commercial" cage uses two lights, two grow units, two fans, two light rails and two pH/ppm meters. Ten plants are assigned to each light, for a maximum count of 20 plants per cage. These form units called "racks," with each rack consisting of 10 lights in five cages. (Single-light cage units for the home grower are available, too.)

In the cage, the plant benches are arranged stadium-style, with a central trough for the bulb to travel through on

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Plants will be arranged stadium-style with a central trough for lighting.



True ebb-and-flow requires individual containers, not flood tables.



Twenty plants grow in each cage, 10 plants per light.

its track. Mark says this puts the outside colas directly across from the light and at the same height as the bulb—not under the light, as in other systems.

“We use 1,000-watt HPS [high-pressure sodium] electronic ballasts that are custom-manufactured for us in China,” Mark continues. “The hoods are manufactured here in Pasco, and the design is based on simple science. Obviously, the closer the light source, the more energy you create. Our bulbs are in the plant canopies, not five feet overhead. But the hoods are cool to the touch. Simply by putting tempered glass over horizontal hoods, you decrease their output by five percent—but move that light five feet away, and you decrease the amount of light hitting the plants by 50 percent. Our system produces more product per watt, per square foot, per day than any other system.”

BUDS's system uses 30 lights, and Mark harvests the plants assigned to one light every other day. “We have a 60-day flowering cycle for these genetics, and we don't want them to outgrow their units.

The closer the light source, the more energy you create. Our bulbs are in the plant canopies, not five feet overhead.

Keeping the plants short concentrates the light energy on the whole plant, not just the top. Our average yield of finished product is about 3 to 4 ounces per plant—with only a 7- to 8-day veg!

“Each cage uses 35 square feet per light,” he adds. “With two lights, that's 70 square feet per cage. Mylar walls keep the light where it belongs: inside the plant canopy. We run 80 to 82 degrees inside the cages for maximum CO₂ utilization. Fans blow directly over the bulb and hood in line with the light mover, keeping the hood from heating up. The air is heated; then, as the light travels down the rows of plants, the water vapor released by the leaves evaporates. The warm, moist air rises as it travels through the cage; at the same time, the cage draws cool, CO₂-rich air in from the floor. Since we don't use oscillating fans, we don't mix the warm, oxygen-rich air with the cool, CO₂-rich air—they separate naturally. It's basically a wind tunnel: The air moves from one end to the other and is heated by the lights. It rises

Blue Persuasion



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Two lights per cage illuminate 70 square feet of cultivation.

wall. We control every aspect of the indoor environment.”

You can check out the ebb and flow of the system for yourself in August, when the HyGroCage is rolled out for both commercial and non-commercial use. (The newly formed Emerald Ventures will supply all of the components required.)

“The HyGroCage provides a healthy, vibrant mini-ecosystem for your plants,” Mark declares.

up and out of the cage.”

Mark describes his system as “plug and play,” eliminating the dangerous hard-wired set-ups of the past. “Everything is snap-and-replace,” he says. “It’s modular,

so you can put it up anywhere at any time. Of course, there are cubic-foot requirements, but we’ve broken the system down to its lowest common denominator. Nothing is fastened to a roof, a ceiling or a

“Doesn’t every grower want that?” ✨

Mark’s new company, Botany Unlimited, will market the HyGroCage. Visit botanyunlimited.com.

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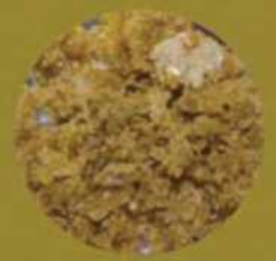
Comparative Extraction Data by Brand

Cardinal Point reviewed extraction properties on a brand by brand basis. Capturing the following data points:

- Color of **first** extraction
- Yield of concentrate per gram of starting material
- Time to complete the initial purge
- Olfactory review of **flavor profile** of **finished** extraction

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While the performance of the Whip-It! brand Premium was superior in yield, color and taste profile, the results of the study reinforced to us that different brands of butane offer the extractor a wide range of solutions for the in-process issues that come up during the solvent based extraction. The rapid honey comb of the Vector and the smooth taste profile offered by Colibri are important arrows in the quiver of a knowledgeable extractor and the variables between brands should be further explored.



WHIP-IT! PREMIUM

Instant tube pressurization was noted. Flush was light yellow and a thorough extraction performed in the first half of the allotted gas. Initial purge was swift and uneventful, secondary purge and material dried very quickly in the allotted time. Superior yield to other products sampled in the study by a significant percentage. The taste panel provided notes stating the taste profile is by far the best of those tested, the lack of harshness or "cough" was noted by all participants. The color was also preferred by the participants.

Color: Light Yellow
Yield: 18.57%
Purge Time: 11 min.
Clean, excellent terp preservation, smooth



NEWPORT

Newport flush was darker in color during the first flush. Initial purge took slightly longer than expected. Secondary purge took approx 2 hours longer than the other products tested in order to reach a fully purged state. Despite the production issues, the final extraction was noted by the test panel to be less "cough" or "harsh" than both Vector and Colibri.

Color: Dark Yellow
Yield: 17.10%
Purge Time: 14 min.
Smooth, good terp preservation



COLIBRI BLUE

Despite the low yield, Colibri demonstrated a fast and light colored flush. Initial purge was uneventful, however in secondary purge the Colibri extracted material demonstrated a "auto-budder" characteristic that is favorable to most mid-level extractors. The taste panel agreed, the final extraction was clean tasting, had a less distinct flavor profile than the other brands tested but the lack of "cough" was noted by all those participating.

Color: Yellow
Yield: 14.20%
Purge Time: 12 min.
Smooth, moderate terp preservation



VECTOR 5

The initial flush was noted to be light yellow where the other brands tested were noted as transparent yellow. The first purge was uneventful. During the secondary purge, the Vector extraction displayed different characteristics than the other brands tested. Within half the allocated purge time, the Vector extracted material formed a honeycomb disk and dried out very quickly. The taste panel advised the taste was smooth, however the consensus was that the post exhale reaction was more "coughy" or harsh than other brands tested.

Color: Dark Yellow
Yield: 13.45%
Purge Time: 13 min.
Smooth, moderate terp preservation

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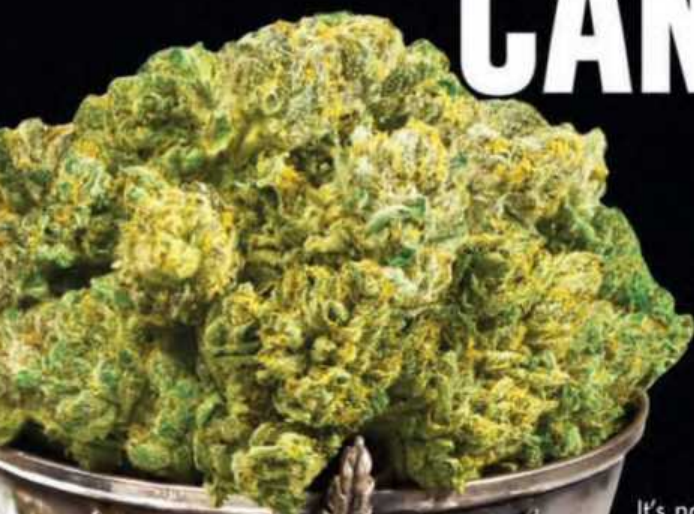
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- Kush Cup
- Spannabis
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- Hempcon
- Highway 420 Anti-Prohibition Rally
- Expocannabis Sur
- Cannabizz
- Nimbin MardiGrass
- Global Marijuana March
- Emerald Empire Hempfest
- Olympia Hempfest
- Hanfparade
- Seattle Hempfest
- Cannatrade
- Expogrow
- Boston Freedom Rally
- Cultiva Hanfmesse
- Cannafest
- Treating Yourself Expo
- Secret Cup
- Growmed
- 707 Cup
- 16th Annual Medical Marijuana Benefit Concert

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Plant Diseases by Jorge Cervantes

In this excerpt from his new book *The Cannabis Encyclopedia*, cultivation expert Jorge Cervantes discusses various common plant diseases and details the treatments to rid your garden of these ills.

Anthracnose

(Fungus)

Common names: anthracnose, leaf blight, leaf shoot, brown blight

Specific pathogens that cause anthracnose include: anthracnose (*Colletotrichum coccodes* = *C. atramentarium* Taubenhans = *C. dematium*)

Threat to garden: low to medium

Identify: Leaves show first symptoms when they turn light green. Soon, sunken, water-soaked spots that grow into irregular shapes develop grayish centers with dark borders. Stems develop white wounds that turn black. Little black and white dots soon develop in the wounds. Stems may develop cankers. This disease is worst during cool, damp weather (especially in clay and bog soils) and when plants are stressed (especially in hydroponic systems). Anthracnose is not transmitted in seeds but can be found on seed surfaces.

Damage: Anthracnose slows growth and diminishes harvest. It is occasionally fatal.

Cause: Anthracnose is caused in cannabis by three species of *Colletotrichum* fungi. *Colletotrichum atramentarium* also causes anthracnose. Brown blight (anthracnose) is caused by *Alternaria* and *Stemphylium*. Fungi will winter in plant debris or soil and start growing in the spring.

Prevention: Sanitation is the best prevention. Remove plant residues. When pruning, make clean cuts with sharp, sterile tools to keep wounds clean. Use new soil and avoid under- or overwatering. Avoid planting in clay soils, or amend clay soils to improve drainage. Do not wet foliage and stems when watering.

Control: *Trichoderma harzianum* (Trichodex) controls anthracnose. Sulfur or copper powders or sprays, applied weekly as soon as the disease is identified, will keep the spores from spreading, but they will not kill the disease. Look for contact fungicides that contain chlorothalonil. There are many systemic fungicides that kill anthracnose.



Leaf damage caused by anthracnose



Damping-off hit this seedling before it developed true leaves.

Damping-Off

(Fungus)

Common names: damping-off, stem rot, moldy germination, young-plant disease

Specific pathogens that cause damping-off include: *Botrytis cinerea*, *Botryotinia fuckeliana* (teleomorph), *Fusarium oxysporum*, *F. solani*, *Nectria haematococca* (teleomorph), *Macrophomina phaseolina*, *Pythium aphanidermatum*, *P. debaryanum* auct., *P. ultimum*, *Rhizoctonia solani*, *Thanatephorus cucumeris* (teleomorph) = *Pellicularia filamentosa*.

Threat to garden: Damping-off poses a high threat to seedlings! See "Gray Mold," (*Botrytis cinerea*) a.k.a. "Bud Mold."

About: Damping-off is a catchall term; the disease has many causes.

Identify: There are two kinds of damping-off. The first kills seeds when they germinate and before they break through the soil. The second type, post-emergence damping-off, is the rotting or wilting of seedlings soon after they emerge from the soil. Succulent stems have become water-soaked and then necrotic and develop a sunken zone at ground level. The little herbaceous plants fall over on the ground. Root decay follows.

Damage: Damping-off attacks rooting cuttings at the soil line if present in the growing medium. As the fungi invade stem tissue, the stem loses girth at the soil line, weakens, and then discolors with a brown, watery soft rot. Finally, fluid circulation is cut, killing the seedling or cutting. Damping-off prevents newly sprouted seeds from emerging and attacks seedlings, causing them to rot at the soil line; it yellows foliage and rots older plants at the soil line.

Cause: Various fungal species, including *botrytis*, *pythium* and *fusarium*, are present in the air, growing medium, plant or seed. This disease breeds in humid conditions and in poorly aerated, overwatered growing mediums. It attacks weak plants.

Prevention: Control soil moisture. Overwatering is the main precursor to damping-off. Careful daily scrutiny of the soil will ensure that the proper amount of moisture is available to seeds or cuttings. Germinate seeds between clean, fresh, moistened paper towels and move them to soil once sprouted. Do not plant seeds too deeply; cover with soil one and a half times the width of the seed. Use a fresh, sterile medium and clean pots to guard against harmful fungus in the soil. Start seeds and root cuttings in a fast-draining, sterile coarse sand, rockwool, Oasis or Jiffy cubes, which are difficult to overwater. Set them on a grate or surface that readily drains. Do not place a humidity tent over sprouted seedlings—a tent can lead to excessive humidity and damping-off. Damping-off is inhibited by bright light; grow seedlings under HID (high-intensity discharge) lights rather than fluorescent bulbs. Keep the use of fertilizers to a minimum during the first couple weeks of growth.

Seeds: Coating the seed with protective dust is a form of insurance. Seed disinfection is used to kill anthracnose and other diseases carried on the seed. Damping-off organisms are in the soil, not on the seed. The coating is intended to kill or inhibit fungi in the soil immediately surrounding the seed and so provide temporary protection during germination.

Cuttings: Cuttings are less susceptible to damping-off and love a humidity tent to promote rooting. Keep germination temperatures between 70°F and 85°F (21.1°C to 29.4°C).

Control
Biological: Apply Polygangron (*Pythium oligandrum*) granules to soil and seed. Bak Pak or Intercept is applied to the soil, and Deny or Dagger—forms of the bacterium *Burkholderia cepacia*—is put on seeds. Epic, Kodiak, Quantum 4000, Rhizo-Plus, System 3 and Serenade also suppress many causes of damping-off.

Chemical: Dust the seeds with Captan. Avoid benomyl fungicide soil drench, because it kills beneficial organisms.

Fusarium Wilt

(Fungal root disease)

Common names: fusarium, stem canker, fusarium wilt

Specific pathogens that cause fusarium wilt include: fusarium foot rot and root rot (*Fusarium solani*); fusarium stem canker (*F. sulphureum*, *Gibberella cyanogena* [teleomorph] = *G. saubinetii*); and fusarium wilt (*Fusarium oxysporum f.sp. cannabis*, *F. oxysporum f.sp. vasinfectum*).

Threat to garden: medium to high

Identify: Fusarium wilt is most common in warm growrooms and greenhouses. Fusarium starts as small spots on older, lower leaves. Inter-veinal leaf chlorosis appears swiftly. Leaf tips may curl before the leaves wilt and suddenly dry to a crisp. Portions of the plant or even the entire plant will wilt. The entire process happens so fast that dead yellow leaves dangle from the branches.

Damage: This disease starts in the plant's xylem, the base of the fluid-transport system. Plants wilt when fungi plug up the fluid flow in plant tissues. Cut one of the main stems in two and look for the telltale reddish-brown color.

Cause: The water and nutrient solution carry this disease with it when contaminated. The disease is present in the growroom, growing medium or plants. Recirculating nutrient solution above 75°F (24°C) creates the perfect conditions for fusarium. It is also spread by contaminated plants, cuttings, etc. Fusarium can also enter via the root system.

Prevention: Cleanliness! Use fresh, clean growing medium. Avoid nitrogen overfertilization. Preventive action is necessary: Keep the nutrient solution below 75°F (23.9°C). Hydrogen peroxide kills bacteria and will also arrest fusarium. Always remove and destroy infested plants.

Control

Biological: Mycostop (*Streptomyces griseoviridis*), Deny or Dagger (*Burkholderia cepacia*), and *Trichoderma*.

Sprays: Treat seeds with chemical fungicides to eradicate the seed-borne infection. Chemical fungicides are not effective on foliage. A metal spray, such as copper or zinc, helps by making the leaf environment more difficult to penetrate.

If there is any root rot present, do not spray vitamins onto the plants. Vitamins around roots may strengthen the fungus that is attacking your plant. If mold or fungal attacks appear on the leaves, discontinue sprays and foliar feedings.

Aboveground indications of root rot are difficult to distinguish from wilt diseases. The three most important wilt diseases include fusarium wilt, which is caused by two forms of *Fusarium oxysporum*; verticillium wilt, which is caused by two *Verticillium* species; and premature wilt (a.k.a. charcoal rot), which is caused by *Macrophomina phaseolina*.

Note: Fusarium oxysporum has been studied and genetically modified to create a "mycoherbicide" or "attack fungus" that preys on cannabis. To the best of my knowledge, the attack fungus has not been released.

Fusarium wilt destroyed this plant.



Botrytis cinerea attacked this flower bud.

Gray Mold

(*Botrytis cinerea*, a.k.a. Bud Mold)
(Fungal disease)

Common names: bud mold, stem rot, bud rot

Specific pathogens that cause gray old: *Botrytis cinerea*

Threat to garden: very high

Identify: Gray mold is the most common fungus that attacks indoor plants; it flourishes in the moist, temperate climates common to many growrooms. It attacks seedlings, clones, stems, buds and stored cannabis. (See "Damping-Off.") On stems, gray mold arises as a grayish-brown to blackish mat of fungus and fungal spores. Stems yellow at the margins of infection. Soft cankers develop that may cause stems to snap. When advanced, the entire stem dies above the infection.

Damage: Gray mold slows growth, diminishes harvest, infects other plants and can lead to plant death.

Prevention and control: same as for flower buds

Flower buds: Bud leaflets yellow and wilt, and pistils become brown. Inside the bud—where gray mold is difficult to see at the onset, and where it is grayish-whitish to bluish-green in color—botrytis appears hair-like and similar to laundry lint in moist climates. Entire buds become enveloped in a fuzzy gray mold that morphs into gray-brown slime. Damage can also appear as dark, brownish spots on buds in less humid environments. Dry to the touch, the botrytis-affected area often crumbles if rubbed. Constant observation—especially during the last two weeks before harvest—is necessary to keep this disease out of the garden.

Damage: Single leaves on the buds that mysteriously dry out could be telltale signs of a botrytis attack inside the buds. Flower buds are quickly reduced to slime in cool, humid conditions, or to

unsmokable powder in warm, dry rooms. Botrytis can destroy an entire crop in seven to 10 days if left unchecked. Stem damage—botrytis starts on the stems, not buds—is less common indoors. First, the stems turn yellow; then cankerous growths develop. The damage causes growth above the wound to wilt and can cause stems to fold over. Transported by air and by contaminated hands or tools, gray mold spreads very quickly indoors, infecting an entire growroom in less than a week when conditions are right. I saw botrytis destroy an entire greenhouse in Switzerland in two weeks.

Cause: Caterpillars, wounds, humidity and dense flowers all factor as causes of gray mold. Airborne spores are present virtually everywhere, as gray mold attacks many plants. It is also transmitted via seeds. Botrytis damage is compounded by humid climates (above 50%). In temperate regions

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with high humidity (60% to 70%) and low temperatures, botrytis can completely destroy a hemp crop within a week.

Prevention: Keep your growroom, your tools and yourself clean. Do yourself a favor and start with clean growing medium! Buy clean medium or treat with steam or electricity. Remove lower leaves from plants and improve the air circulation between plants.

Also, grow disease-resistant strains. For example, the dense, tightly packed, moisture-retaining buds of cannabis afghanica are the most susceptible. Some afghanica varieties came from arid climates and have no resistance to gray mold.

Minimize botrytis attacks with low humidity (50% or less) and ample air circulation and ventilation. Grow varieties that do not produce heavy, tightly packed buds that provide a perfect place for this fungus to flourish. Moist, cool climates (below 70°F or 21.1°C, with humidity above 50%) are perfect for rampant gray-mold growth. Many crosses are more resistant to gray mold than pure *indica* varieties.

Remove dead leaf stems (petioles) from stalks along with the damaged leaves to avoid outbreaks, since botrytis is often harbored by dead, rotting foliage. Increase plant spacing and the air circulation between plants. Increase ventilation; keep the



Botrytis cinerea spread through this entire greenhouse in about two weeks.

humidity below 60%; and keep the growroom clean! Use fresh, sterile growing medium for each crop. Water when the lights go on so that the water doesn't sit all night. Mulch plants to avoid water splashing from soil onto the leaves.

Excessive nitrogen and phosphorus levels make foliage tender, allowing botrytis to get a foothold. Higher levels of calcium will lower the incidence of botrytis. Make sure the pH is around 6.0 to facilitate calcium uptake. Low light levels also encourage weak growth and gray-mold attack, so keep the levels bright. Botrytis needs UV light to complete its life cycle; without UV light, it cannot live.

Control

Cultural and physical control: As soon as botrytis symptoms appear, use alcohol-sterilized pruners to remove infected buds at least one inch (2.5 cm) below the infected area. Do not let the bud or anything that touches it contaminate other foliage. Remove it from the garden and destroy it. Wash hands and tools after removing infected buds. Increase the temperature to 80°F (26.7°C) and decrease humidity to below 50%.

Biological: Spray plants with *Gliocladium roseum* and *Trichoderma* species. Prevent damping-off with a soil application of *Gliocladium* and

Trichoderma species. The book *Hemp Diseases and Pests: Management and Biological Control* suggests experimenting with the yeasts *Pichia guilliermondii* and *Candida oleophila* or the bacterium *Pseudomonas syringae*.

Sprays: Fixed copper (copper hydroxide, copper oxide, copper oxychloride), copper sulfate, hydrated lime, lime sulfur and elemental sulfur keep the early stages of botrytis in check as long as it is present on the foliage. Preventive spraying is advised if in a high-risk area, but spraying buds near harvest time is not advised. Seeds are protected from botrytis by a coating of Captan. Check with your local nursery or hydroponic store for product recommendations.

Sprays of calcium silicate, a sealant for concrete and egg shells (2,000 ppm), calcium bentonite (from (California) and calcium formate (2,000 ppm) provide effective control of fungi and are safe alternatives to highly toxic fungicides. Potassium bicarbonate (baking soda) changes the pH on the surface of the foliage so that botrytis cannot grow there.

AQ10, a microbial biofungicide that parasitizes powdery mildew, can control and even eliminate the disease. AQ10 will actually eliminate botrytis when plants are no more than 3% infected.

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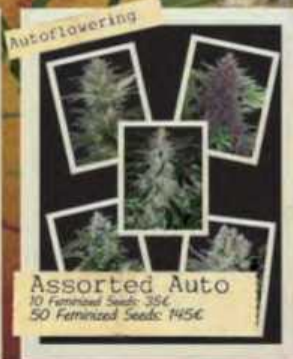
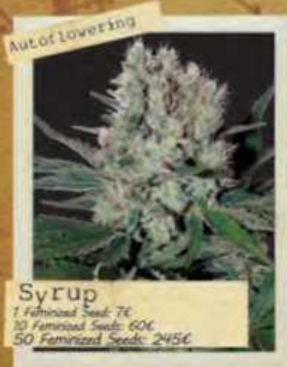
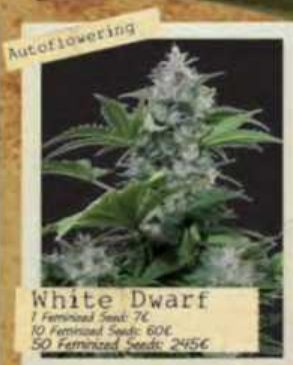


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Leaf Spot

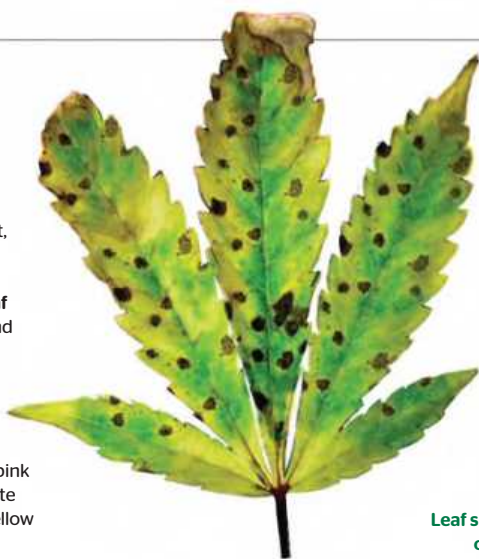
(Fungal and bacterial disease)

Common names: brown blight, brown leaf spot, leaf-spot root disease, Curvularia leaf spot, olive leaf spot, pink rot, tar spot, Stemphylium leaf and stem spot, white leaf spot, yellow leaf spot

Specific diseases that cause leaf spot include: brown leaf spot and stem canker (*Ascochyta* spp., *A. prasadii*, *Phoma* spp., *Didymella* spp. [teleomorph], *P. exigua*, *P. glomerata*, *P. herbarum*); olive leaf spot (*Cercospora cannabis*, *Pseudocercospora cannabina*); pink rot (*Trichothecium roseum*); white leaf spot (*Phomopsis ganjae*); yellow leaf spot (*Septoria cannabis*, *S. cannabina* Peck); Curvularia leaf spot (*Curvularia cymbopogonis*, *C. lunata*, *Cochliobolus lunatus* [teleomorph]); and Stemphylium leaf and stem spot (*Stemphylium botryosum*, *Pleospora tarda* [teleomorph], *S. cannabinum*).

Alternaria alternata is a common fungal pathogen of some 380 different plants and seeds. The opportunistic pathogen causes leaf spot and other diseases. *A. alternata* also causes upper-respiratory-tract infections and asthma in people who are sensitive.

Threat to garden: These diseases rarely kill plants, but they do sharply reduce crop yields.



Leaf spot can be mitigated by using organic disease-control spray.

Identify: Leaf and stem fungi, including leaf spot, attack the foliage. Brown, gray, black, or yellow to white spots or blotches develop on leaves and stems.

Damage: Leaves and stems become discolored and develop spots that impair fluid flow and other life processes. Spots expand over the leaves, causing them to yellow and drop. Growth is slowed and harvest prolonged; in severe cases, death results. Leaf spot is the symptomatic name given to many diseases.

Cause: Bacteria, fungi and nematodes

carry this disease. Spots or lesions caused by fungi often develop different colors as fruiting bodies grow. Leaf spots are often caused by cold water that was sprayed on plants under a hot HID light. Temperature stress causes the spots, which often develop into a disease.

Leaf spot can also be caused by (1) fungi already present in an unsterile rooting medium; (2) overwatering and maintaining a soggy growing medium; or (3) excessive humidity. Viral pathogens are another major cause of some leaf spots.

Prevention: Cleanliness! Use fresh,

sterile growing medium with each crop. Move HIDs away from the garden canopy about 30 minutes before spraying so that plants won't be too hot. Do not spray within four hours of turning the lights off, as excess moisture sits on the foliage and fosters fungal growth. Do not wet foliage when watering, and avoid overwatering. Lower growroom humidity to 50% percent or less. Check the humidity both day and night. Employ dry heat to raise the nighttime temperature five or 10 degrees above daytime levels, and keep the humidity more constant. Allow adequate spacing between plants to provide air circulation. Remove damaged foliage. Avoid excessive nitrogen application.

Control

Biological: Copper- and sulfur-based sprays may help to keep leaf spot in check, but they are often phytotoxic when applied regularly indoors. Many bacterial and fungal diseases can be controlled with *Bacillus subtilis* (Serenade). 🌱

Adapted from *The Cannabis Encyclopedia*, by Jorge Cervantes, \$50 (softcover) \$70 (hardcover). Find it at hightimes.com or by visiting Jorge's website, marijuanagrowing.com.

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A promotional poster for Sunfed Stonehenge 2015. The background features a dramatic sky with a bright sunburst on the left and a blue sky with wispy clouds on the right. In the foreground, a large, dark, textured stone structure resembling Stonehenge is visible. The text 'Sunfed' is written in a large, stylized, blue and yellow font at the top, with 'STONEHENGE 2015' in a smaller, yellow, blocky font below it.

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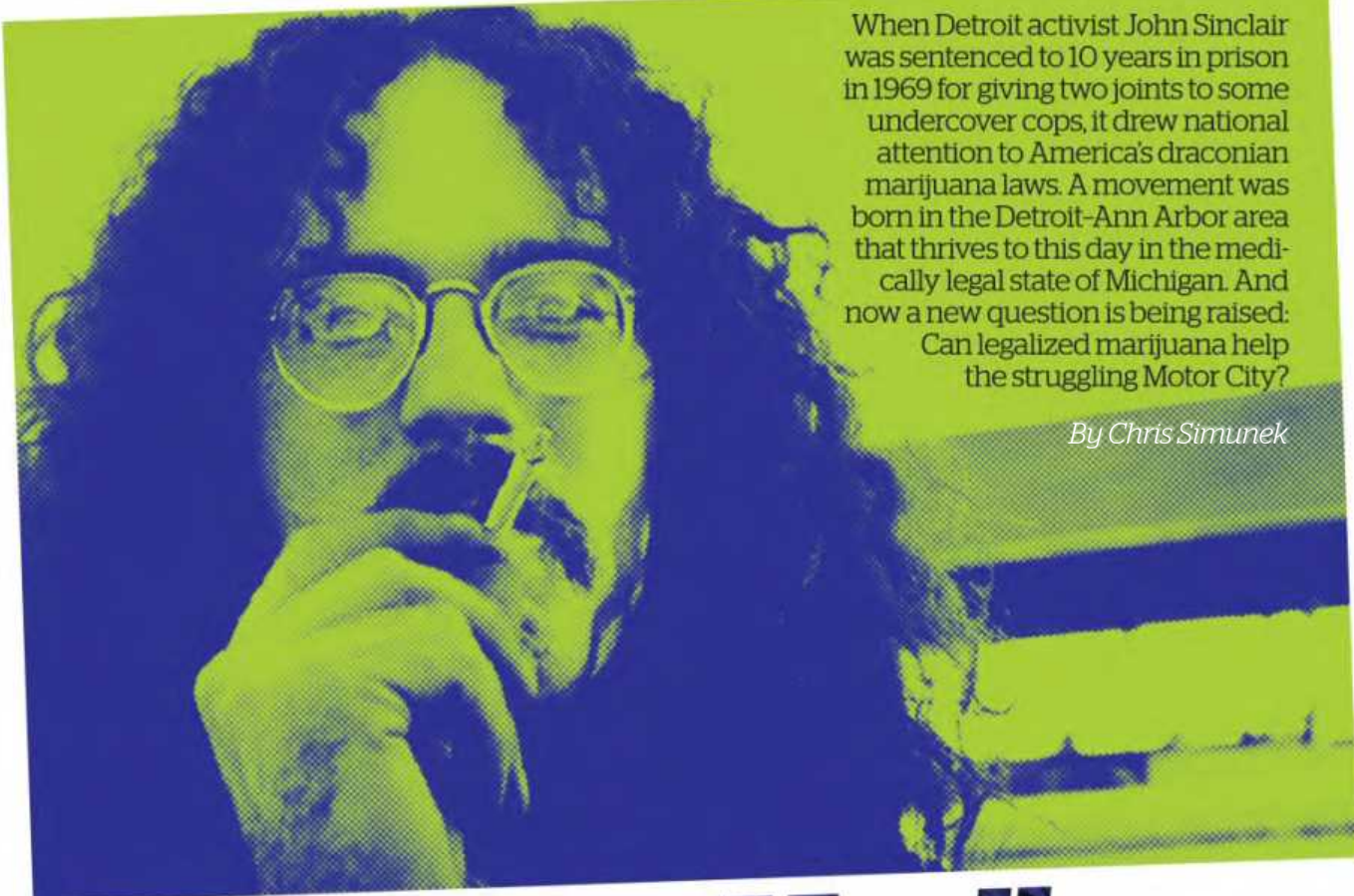
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When Detroit activist John Sinclair was sentenced to 10 years in prison in 1969 for giving two joints to some undercover cops, it drew national attention to America's draconian marijuana laws. A movement was born in the Detroit-Ann Arbor area that thrives to this day in the medically legal state of Michigan. And now a new question is being raised: Can legalized marijuana help the struggling Motor City?

By Chris Simunek

Motor City Marijuana

The Dawning of the Age of Zenta

The marijuana movement didn't start in Detroit, but it exploded here. By 1966, John Sinclair—poet, provocateur and native son of the Wolverine State—had proved himself to be the highest-profile longhair in the city, thanks to his founding of the Detroit Artists Workshop and the Trans-Love Energies commune, and his numerous writings in the underground press. Dubbed the “High Priest of the Detroit Hippies” by the *Detroit News*, Sinclair would eventually form the White Panther Party, whose stated objectives included a “total assault on the culture by any means necessary, including rock and roll, dope and fucking in the streets.”

Before the race riots, the collapse of the auto industry and the city's designation as the Murder Capital of the United States gave the squares in Detroit something real to worry about, this 6-foot-4, 200-plus-pound beatnik in Trotsky spectacles appeared in their *Leave It to Beaver* daydreams like the first horseman of Harry Anslinger's prophesied marihuana apocalypse. Sinclair was openly hostile to the straight folk who would soon comprise Richard Nixon's “Silent Majority,” while at the same time inciting their sons and daughters to join the revolution. “Good people”—the sort of folks who made and enforced the laws of the

land—would have rather slain their own young than see them live in the psychedelized society that Sinclair and his comrades were toiling to construct. And while they couldn't get the man for being a pinko freak, they damn sure could pop him for dope.

Wayne Kramer, founding member of the MC5, the seminal Detroit rock band that Sinclair managed, remembers: “I met John Sinclair the day he was released from the Detroit House of Correction after serving a six-month sentence for his second conviction for possession of marijuana. And then he wrote this fabulous poem called ‘The Poem for Warner Stringfellow.’ Warner Stringfellow was the Detroit narcotics detective that busted John, and John used the power of poetry to call him out. The poem is a scathing indictment of police tactics, Drug War tactics, Drug War mentality, and it so incensed the detective that he vowed to get Sinclair. And he did. It was a personal vendetta.”

Enter “Louie,” a beatnik candle-maker, and “Pat,” his miniskirted companion. In reality, the two were *Mod Squad*-style narco cops named Vahan Kapagian and Jane Mumford Lovelace, who started hanging out at the Trans-Love Energies headquarters, offering to cook or clean or whatever else might further the cause they were employed to derail. It could have been the dope, or the acid, or the sight of Lovelace's legs, but

Sinclair failed to realize that Kapagian was the same cop who had busted him the last time, hiding beneath a shaggy haircut and beard. On December 22, 1966, “Pat” hit him up for some weed, and Sinclair invited the pair over to his residence and twisted them up two joints that were dutifully tucked into a pack of Kools. A month later, 34 local, state and federal agents raided the commune and hauled 56 people off to jail. Ultimately, only Sinclair was indicted.

In the two and a half years that he was free and fighting his case, John Sinclair was not a quiet man. Together with the

the sacrament by having it in your possession.”

But even Zenta’s benevolent deities couldn’t prevent what happened next. On July 28, 1969, Detroit Recorder’s Court Judge Robert J. Colombo sentenced Sinclair to nine and a half to 10 years for the two joints he had given the nares at the end of 1966. On the outside, the White Panthers, including Sinclair’s wife Leni, were singularly focused on obtaining his release. Their efforts failed to penetrate Michigan’s halls of justice, but they did manage to move a Beatle.

“When John Lennon and Yoko Ono

provided the nascent marijuana movement with its first substantial victory. Three days later, the Michigan Supreme Court ordered Sinclair released on an appeal bond, before ultimately overturning his conviction and declaring the state’s marijuana law unconstitutional.

As the 1970s progressed, the White Panthers would morph into the Rainbow People’s Party, and some of its members would go on to form the Human Rights Party. After winning a few seats on the Ann Arbor City Council, the Human Rights Party was responsible for instituting the “five-dollar pot law” in Ann Arbor, effectively decriminalizing marijuana possession in the city.

“It’s a violation—these cops coming in your house, going through your closet, finding your stash,” Sinclair says. “It was just humiliating. I hated it. I didn’t think they should be able to do this. And the other part, of course, was that I was going to continue smoking weed, possessing weed; it would continue to be part of my daily life. After I got busted the third time, I thought if I didn’t do something about the marijuana laws, they would just come back for me year after year. And our efforts, I’ll say without any prevarication, created Ann Arbor as the dope capital of the Midwest, because you were safe.”

Free the People, Free the Weed

Fast-forward to April 4, 2015, and I’m watching John Sinclair, clad in a black turtleneck and beret, receive a riotous welcome from a few thousand grateful stoners as he steps to the microphone at the 44th Annual Hash Bash in Ann Arbor. Held on the University of Michigan Diag, Hash Bash is the longest-running pot rally in the country and a direct descendent of the 1971 John Sinclair Freedom Rally. Sinclair is all smiles as he reads a poem about jazz. And why wouldn’t he be? He won. Sinclair has lived long enough to see one of the White Panthers’ core agenda items—the legalization of marijuana—reach adolescence. And Warner Stringfellow? He died some years back, and if you Google his name, the only thing that comes up is the poem Sinclair wrote about him in 1966.

Michigan legalized medical marijuana back in 2008. A 2014 accounting showed that there were 146,811 medical marijuana patients in Michigan, the second-highest number in the country after California. The “good people” today who make and enforce the laws of the land are defecting to marijuana’s side in increasing numbers.



From top: Pun Plamondon, John Sinclair and Wayne Kramer contemplate the cosmos; John and Yoko talk revolution with Leni and John Sinclair.

MC5, he ushered in a new era of political radicalism in the Motor City with the formation of the White Panther Party.

“As things got hairier, with the police and the violence and the emergence of the Black Panther Party, we reinvented ourselves as the White Panthers,” Kramer says. “But, you know, it was a bunch of guys and girls sitting around, smoking a lot of weed and laughing their asses off.”

“Our religious leader, Brother JC, came up with this concept of ‘Zenta,’” Sinclair remembers, “but there was never an explanation for it. He would just give us some kind of gobbledygook. And he said, ‘Halloween—that’s the Zenta New Year!’ So we decided to record *Kick Out the Jams*, the MC5’s first album, live at the Grande Ballroom, October 30 to 31, 1968. Later, we registered as an ecclesiastical nonprofit corporation. We were going to develop it as a way to fight marijuana busts: If you were a member of the Church of Zenta, weed was your sacrament, and you were simply honoring



befriended the Yippies in New York, Jerry Rubin told them about John Sinclair being in jail for 10 years for two joints, and they found that outrageous,” Leni Sinclair recalls. “Because of John Lennon’s prior conviction for weed in England, he felt sympathetic. And then he wrote that song, ‘John Sinclair,’ and somebody played that song for John while he was still in jail in Jackson, and of course he couldn’t believe his ears: ‘Wow, that’s about me—the Beatles!’ And then John and Yoko volunteered to play the Freedom Rally.”

With John and Yoko on board, the John Sinclair Freedom Rally, held on December 10, 1971, shined a national spotlight on Michigan’s draconian pot laws and



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On this cold Midwestern noon, I also witness the most inspiring speech I've heard yet from an elected official regarding the legalization of marijuana. That person would be Virgil Bernero, the mayor of Lansing, Michigan's capital city. Eighteen cities in the state—including Lansing, Detroit and Ann Arbor—have passed ballot measures to decriminalize marijuana possession in varying degrees. Commanding the microphone, Bernero led the crowd in a chant of "Free the people, free the weed!" before launching into a fiery speech.

"The War on Marijuana," Bernero declared, "has been a war on the good and decent citizens of Michigan and America. It is a war against our children. It is a war against our communities—especially our communities of color... When you free the weed, you free the people, you free the ingenuity, you free the entrepreneurship, you free the economy, and you free up some jail space. Our prisons and jails are overcrowded with nonviolent offenders. The stigma of drug convictions follows them for the rest of their lives... Let the word go out to every citizen and every politician: The War on Marijuana is a war on the people. It is immoral, it is unsustainable, it is counterproductive—and, my friends, it is over!"

Detroit Dab Warz

I first met Rhory Gould, an avid baseball collector, in New York over 20 years ago, when a mutual friend introduced us and I traded him a Ricky Henderson rookie card that I found in my attic for half an ounce of herb. We reconnected at the High Times Medical Cannabis Cup in Richmond, California, shortly after he started Arborside in Ann Arbor in 2011. The dispensary has since won several High Times awards, including a first place Michigan Cannabis Cup in 2014 for its Catfish strain.

Coming from New York, it's always refreshing to walk into an establishment like Arborside that treats cannabis like any other commodity on the market. However, in Michigan, dispensaries still exist in a legal gray zone: Four years ago, an appeals court ruled them technically illegal under the state's medical marijuana law, and the Michigan Supreme Court upheld that ruling two years ago. Given its history, Ann Arbor is about as safe a place for a dispensary as can be. (By contrast, up north in Otsego County, state cops raided eight dispensaries this past May.)

2016 is looking to be a breakthrough year for legal, recreational marijuana in



Dab Warz is an example of how the marijuana industry is filling voids in this city.

Michigan. Assuming the legislature does not act before then, there are several ballot proposals moving forward in time for the 2016 elections. One put forth by the activist-led Michigan Comprehensive Cannabis Law Reform Committee (MI Legalize) would tax marijuana at 10% (above and beyond state sales tax), allow up to 12 plants for home cultivation and preserve the state's existing medical marijuana laws. Another group, the Michigan Cannabis Coalition, said to include Republican backers, would legalize recreational marijuana, allow the licensed home cultivation of two plants, and earmark tax money for education, public health and public safety. The most controversial ballot proposal (and thus far, the most secret) is being put forth by the Michigan Responsibility Council (MRC). It is said to be looking towards a venture-capitalist-driven proposal, similar to the one sponsored in Ohio by ResponsibleOhio, wherein the state's medical marijuana laws would be abolished, home growing would be outlawed, and only a small, hand-picked cartel would be licensed to cultivate marijuana for the retail market, thus concentrating the lion's share of the legal marijuana industry's profits in the hands of the MRC and its cronies.

And while that battle is gearing up for 2016, there is another, friendlier war in my immediate future. Downtown Detroit

is clogged with baseball fans pouring out of Tiger Stadium drunk on victory and beer as Rhory and I try to find our way to a weekly pot party called Dab Warz. Rhory doesn't remember exactly where it is, only that it's nestled somewhere amongst the ruins.

I'll admit to being a dilettante when it comes to urban decay. When I see hollowed-out buildings from the age when bricks, mortar, corning and cornerstones were architectural givens, I get nostalgic for the long-gone New York that I grew up in, before its glass-box, low-crime, chain-store makeover transformed it into the go-to destination for every kind of asshole.

Dab Warz is held on a desolate street in a past-its-prime building that wouldn't normally attract entrepreneurs. It's a small example of how the marijuana industry is filling voids in this city where others fear to tread. Inside, there are about two dozen vendors selling pot, clones, concentrates and other wares appealing to the discerning stoner. Extract artists come from around the state to compete for the Dab Warz champion's belt. (Yes, there is a belt). The event is the brainchild of Big Jay, who grew up watching his mom quit cigarettes and start medicating with cannabis after a bout with cancer.

"I have a lot of friends who will never be able to take a trip to California," Big Jay says. "So I've tried to bring that to Detroit—a place where people can medicate. You go to a dispensary, you don't want to ride around smoking where you can get pulled over. So let's find all the best extraction artists in our cities, bring them together and go to 'war' as fun. So if you're looking for a caregiver, if you're looking for knowledge, you know that if you come through that door, it's just like *Cheers*: Everybody knows your name."

A Little More Every Day

Visiting Detroit and not seeing rock'n'roll is like going to Disneyland and ducking the Mouse. Lucky for me, Wayne Kramer is in town playing a few shows and promoting Jail Guitar Doors. Taking its name from a song The Clash wrote about his incarceration (Kramer served two and a half years in the '70s on a cocaine-conspiracy beef), the program donates guitars and sponsors workshops and concerts inside prisons. It was started in England by musician Billy Bragg; in 2009, Kramer and his wife Margaret joined Bragg in extending the program to the United States.

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“I’m an archetype Drug War prisoner,” Kramer explains. “I got a four-year sentence for my offense, which I thought was pretty severe at the time for a nonviolent economic crime. After I was released, I started to track more people like me, going to prison for longer sentences and under worse conditions. And over the next 30 years or so, it started to really disturb me. At some point, I decided to confront my own nihilism, my own apathy, my own meaninglessness, by taking some ethical action. And I thought: ‘I’m a musician. I’m a formerly incarcerated person. What could I do?’”

This week, he’s bringing the program home to Michigan, donating eight guitars to the Saginaw Regional Correctional Facility.

“We tell them that these guitars are not gifts,” Kramer says, “and if they accept these guitars, they’ve accepted the challenge to step up and begin the hard work of positive change. The guitar can be the key that unlocks the cell; it can be the key that unlocks the prison gate. And it could be the key that unlocks the rest of your life, to give you an alternative way to deal with things.”

He invites me to check out a gig he’s doing at the Detroit Institute of the Arts,



showcasing Jail Guitar Doors USA and the new documentary *Louder Than Love: The Grande Ballroom Story*, about Detroit’s premier rock’n’roll club in the late ’60s.


Before the show starts, I have some time to visit Diego Rivera’s colossal Detroit Industry Murals, a series of 27 frescoes considered to be his crowning work, which the Detroit Institute of Arts commissioned from the Mexican artist in 1932. Rivera, an avowed Marxist, discovered here, in the slamming V-8 heart of mechanized America, that it was possible for capitalist industry to have soul. And that soul came from its laborers: the machinists, ironworkers, chemists and scientists who labored over blasting furnaces, turbines, conveyer belts and lab equipment to make automobiles, fighter planes, weapons and

vaccines. It’s industrial Detroit’s memento mori—a golden age preserved in motion, like the casts of Pompeii.


Detroit today has cheap land and a badly underutilized labor force: 70,000 abandoned buildings, 90,000 vacant lots and an 11.7 percent unemployment rate. An influx of industry can revitalize any place, provided it’s done in such a way that it invests in the area and gives jobs to the existing populace.

Marijuana legalization in this country will continue to proceed state by state, but federal legalization for medical, industrial and recreational purposes is inevitable. And presuming this happens in a way that encourages the marijuana industry’s growth according to free-market principals—meaning that it’s not overburdened with excessive government regulation and taxation, on the one hand, or turned over to a cartel of venture capitalists, on the other—one can envision the cannabis plant becoming the foundation of a new agricultural boom that accomplishes for cities like Detroit what the grape has for Napa.

Legalize marijuana in Michigan, legalize it throughout America, and we will share, one and all, in the prosperity of a Zenta renaissance. ✨

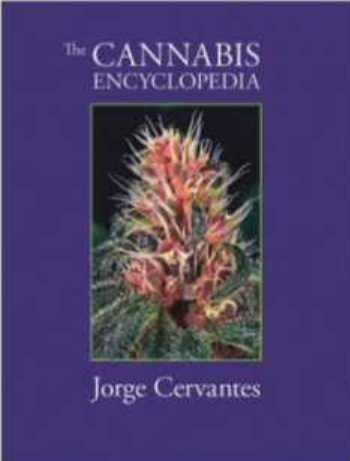


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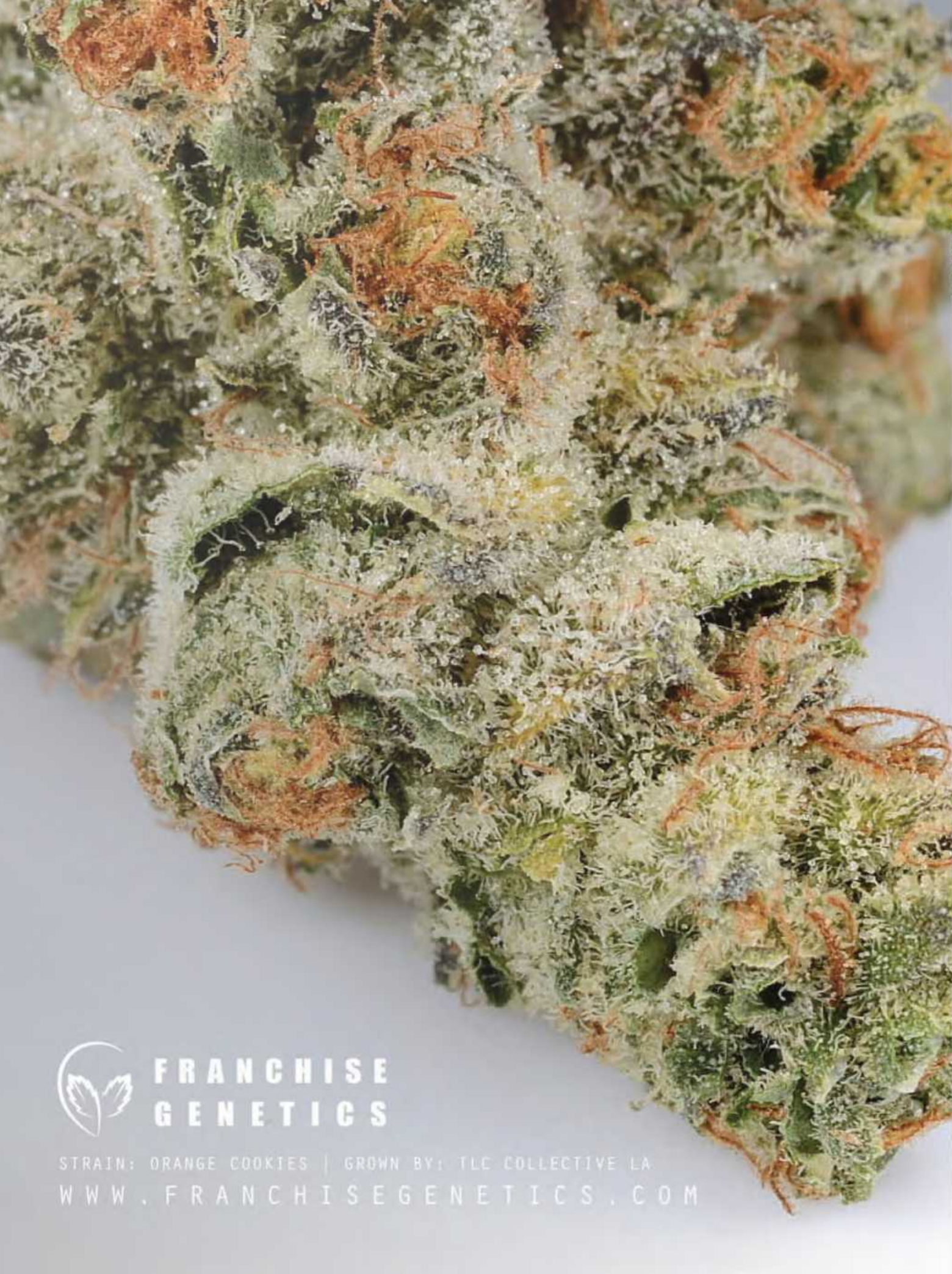
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INTERVIEW BY
CHRIS SIMUNEK

MEL FRANK

THE HIGH TIMES INTERVIEW

MEL FRANK IS THE CO-AUTHOR, WITH ED ROSENTHAL, OF THE 1974 BOOK *THE*

MARIJUANA GROWER'S GUIDE: INDOOR/OUTDOOR HIGHEST QUALITY.

BUT MORE IMPORTANT IS WHAT FOLLOWED, THEIR SEMINAL *MARIJUANA GROWER'S GUIDE, DELUXE EDITION*, PROBABLY THE MOST INFLUENTIAL CANNABIS-CULTIVATION BOOK EVER PUBLISHED. IN THE 1970S, WHEN NEARLY ALL OF THE POT ON THE AMERICAN MARKET WAS IMPORTED FROM MEXICO AND SOUTH AMERICA, FRANK AND ROSENTHAL DETAILED HOW TO GROW HIGH-QUALITY MARIJUANA AT HOME, BOTH INDOORS AND OUT. A *NEW YORK TIMES* review called the *DELUXE EDITION* "AN EXTREMELY CLEAR AND INTERESTING ESSAY IN PRACTICAL HORTICULTURE, AS ACCESSIBLE A STUDY OF A SINGLE PLANT, AT THIS HIGH LEVEL OF SERIOUSNESS, AS ONE IS LIKELY TO FIND." SALES OF THE BOOK SOARED INTO THE HUNDREDS OF THOUSANDS, USHERING IN AN ERA OF DOMESTIC CULTIVATION THAT, OVER THE PAST 40 YEARS, HAS GROWN INTO A MULTIBILLION-DOLLAR INDUSTRY IN THE UNITED STATES.

BORN IN 1944, JAMES J. GOODWIN BEGAN EXPERIMENTING WITH INDOOR MARIJUANA CULTIVATION IN A NEW YORK CITY APARTMENT SOON AFTER LEAVING THE NAVY IN 1967. IN 1971, UNDER THE PSEUDONYM MEL FRANK, HE PUBLISHED THE FIRST-EVER MARIJUANA-CULTIVATION ARTICLE IN A TWO-PART SERIES IN THE *NEW YORK FLYER*, A SHORT-LIVED LOCAL SUPPLEMENT PUT OUT BY *ROLLING STONE*.

AFTER FRANK MET ED ROSENTHAL IN NEW YORK, THE PAIR MOVED TO CALIFORNIA IN THE MID-'70S AND CONTINUED THEIR STUDIES. THEIR HOUSE IN OAKLAND BECAME A MUST-VISIT SITE FOR A GROWING LEGION OF MARIJUANA HORTICULTURISTS ACROSS THE NATION. OVER TIME, FRANK AMASSED A COLLECTION OF MORE THAN 200 LANDRACE CANNABIS STRAINS FROM AROUND THE WORLD AND



Mel Frank in his outdoor California garden

SHARED THOUSANDS OF SEEDS WITH OTHER GROWERS THROUGHOUT THE '70S AND '80S. IN 1977, HE WAS IN TOUCH WITH THE US GOVERNMENT'S MARIJUANA-RESEARCH PROGRAM AT THE UNIVERSITY OF MISSISSIPPI AND, IN EXCHANGE FOR A PEEK AT THE LAB RESULTS, DONATED NINE LANDRACE STRAINS FOR THE RESEARCHERS TO STUDY. AS A BREEDER, HE DEVELOPED THE VARIETIES AFGHANI #1 AND DURBAN POISON—WHICH, ALONG WITH HAZE, HINDU KUSH AND SKUNK #1 FROM OTHER CALIFORNIA BREEDERS, BECAME THE BASIS FOR THE COMMERCIAL SEED INDUSTRY IN AMSTERDAM.

IN 1988, FRANK FOUNDED RED EYE PRESS AND PUBLISHED HIS *MARIJUANA GROWER'S INSIDER'S GUIDE* AS WELL AS UPDATED VERSIONS OF THE *DELUXE EDITION*. HE WAS ALSO THE EDITOR AND PUBLISHER OF *HASHISH!* BY ROBERT CONNELL CLARKE, CONSIDERED THE DEFINITIVE BOOK ON THE SUBJECT. FRANK'S RELATIONSHIP WITH *HIGH TIMES* BEGAN IN 1974, OUR FOUNDING YEAR, AND HE REMAINS ONE OF THE WORLD'S FOREMOST EXPERTS REGARDING THE BOTANY, CULTIVATION AND CHEMISTRY OF THE CANNABIS PLANT.

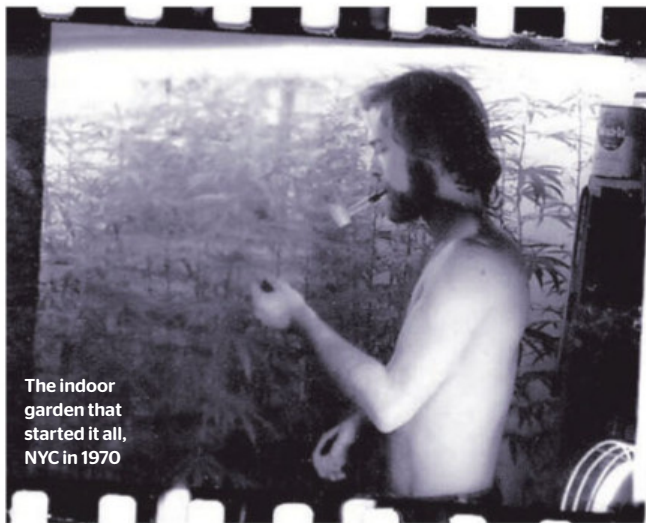
You told me once that you first heard about marijuana when you were in the Navy.

I was a shipboard electronics technician in the Navy from September 1963 to September 1967. One time we were in Jamaica, and a couple of guys came and said, “Hey, we’re going to go smoke some stuff, buddy. You wanna come with us?” I declined, because I was pretty short then—“short” meaning I was getting close to the time I got out, and there was no way I was going to risk the brig and have to make up the time.

After that, the Navy sent me to the Bethlehem Steel yard where my ship was being refurbished. We were a skeleton crew of about 10 of us, and the only thing we had to do was pick up the mail every day and then send it out to the various ships where our old shipmates had been sent. But they didn’t allow fourth-class mail to be forwarded, which was magazines and newspapers, so we had all these magazines to read—and in the summer of 1967, what were all the magazines writing about? Kids doing acid and marijuana and everything else. They’d have stories: “Five college students go blind after eating acid.” I’m reading this stuff, and I don’t think those smart college kids are going blind. I couldn’t wait to get out and try all these drugs.

When did you first try to grow?

I moved to New York after the Navy in November 1967 and smoked my first joints near the end of the year. When I first bought an ounce of brown Mex, you know, it had a thousand seeds in it. I had a big apartment I shared with my girlfriend and her best friend—they were two great women—and I just started planting the seeds. I was already growing loads of houseplants, so I set up our little eight-by-eight room with four-foot fluorescents, just for growing.



The indoor garden that started it all, NYC in 1970

“The *Deluxe* really brought out the fact that you could grow marijuana anywhere you lived and it could be at least as good as anything you could buy. It got the country thinking it could grow marijuana.”

How did it come to pass that you wrote the first-ever cultivation article for *Rolling Stone*?

In 1971, I was talking to a friend, Ross Gelbspan, who was an incredible journalist—in fact, he later won a Pulitzer—about how I had to make some money to pay the rent. He said, “Why don’t you write an article and we’ll sell it?” We brought it to *Rolling Stone*, and they called me a couple of weeks later and said, “Hey, we’re going to print your article in a two-part series in our *New York Flyer*—what name do you want to use?” I hadn’t thought about using a pseudonym. We had three cats: Melon, Frank and Yammy. And I thought, “I can’t be Frank Melon, that doesn’t work. All right, make it Mel Frank.”

The editor also told me that I should meet this guy, Ed Rosenthal. Ed had gone to *Rolling Stone* at the same time I did with another article on growing pot. So anyway, Ed came to me, and the first time he met me, he says, “We should write a book.” I didn’t

want to write a book, but Ed can be very persistent. And after a year or so, I finally relented—really so that he’d leave me alone [laughing]. We basically took the *Rolling Stone* article and flushed it out with outdoor info, and it became a 96-page little book. And to Ed’s credit, he completely changed our lives, because he went to the West Coast looking for a publisher. I think it took him about a year before he found Level Press in San Francisco, and they published the book in 1974. We split 35 cents a book in royalties.

By then I was going to college full time and taking all the biology courses I could, especially botany, chemistry and microbiology, and now I was determined to write a comprehensive guide to growing marijuana that included history, botany, chemistry and whatever else was known. Eventually, And/Or Press published the *Deluxe Edition* in ’77, and the *New York Times* gave it a very good review, and boom!—that

was it. It started selling everywhere.

You know, there were plenty of marijuana growers before I arrived on the scene. There were guys in the ’60s; I’m sure there were guys in the ’50s and ’40s, too. There were already good hybrid strains on the West Coast by the time I moved to the Bay Area in ’76. The thing that the *Deluxe Edition* did is, it distilled all of the scientific material that had been published on marijuana. It explained the cannabinoids, it gave a brief history and had accurate botany, and it explained the photoperiod—which, once you understand the photoperiod, you can manipulate the plants and do all kinds of strategies with it. The *Deluxe* really brought out the fact that you could grow marijuana anywhere you lived and it could be at least as good as anything you could buy. It got the country thinking it could grow marijuana.

Then you and Ed moved in together, right?

We bought a house in Oakland in ’77. We converted a shed in the back that wasn’t even 400 square feet. We took off the roof and then covered it with windows that we got from a junkyard and grew pot in there.

Ed would travel to Amsterdam and bring back seeds. Amsterdam was nothing special at that time in the ’70s, except that all their pot came from the Middle East and from Africa, which was unique to us because we got all our stuff from South America, Mexico and Thailand. At that time, you also had the Hippie Hashish Trail. Hippies were going all over the world; you could go to Lebanon, Africa, Afghanistan, Pakistan and all that, with few worries. And with the book coming out, people found us. Guys would come from Arkansas and Alabama, Kansas, Hawaii,

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all over, with the seeds that they'd brought back from Afghanistan and everywhere else. And we would trade seeds.

Well, at that time, a local grower gave me an Afghani—it was actually an Afghani hybrid—and I bred to improve it. It became Afghani #1, since it was my most potent Afghani. I grew Congolese, Nigerian, South African, Nepalese, Pakistani, Thai and Cambodian, besides the usual Mex and Colombian. I also met Dave Watson and Rob Clarke at that time—this was maybe about '78, '79—and they came to see me, and pretty soon we were trading seeds. Dave Watson gave me Haze; he gave me some South Indian; he gave me a Nepali. I don't think he gave me Skunk #1 at that time, as I don't remember growing it. And I gave him the Afghani #1 and my Durban Poison.

Durban Poison was the one that I felt was really my strain, because I took that landrace from something that was mediocre pot and very quickly got it to the point where it was potent. But the main reason I was breeding it was because it matured well before anything else. It was done about a month sooner than the Afghanis, so they would be ready late September to late October, and the Durban was ready in August and early September. I took it back east, and we harvested most of it in August, 60 miles from New York City. I have a funny *High Times* story, but it's off the record, okay?

All right.

I grew over 500 pounds of pot 60 miles from New York City, and it was really the best pot that anybody there had ever

smoked. Almost all of it was Afghani and Congolese backcrossed, Afghani and Nigerian backcrossed, Durban Poison hybrids, and a few other things—pure Afghani and stuff—along with some shitty pot that the local growers had. Anyway, I rented an apartment in New York City but spent most of my time at the grow. After it had all been dried and they were weighing and bagging it, I left, as I didn't wanna know anything from that point on—

The next big breakthrough is going to be being able to grow outside without being hassled—because we should all be growing in the sun.

where they were selling it or whatever. But a couple of weeks later, I stopped by *High Times* before I left for Oakland. And I'm in there, and I'm talking to a guy, and somebody came back and said, "Hey, Mel, you gotta see this stuff—you gotta try this stuff."

All right, so he brings me back, and they have a bag of buds, and I take one look, one smell, and I know it's Afghani x Congolese. I know exactly what it is, and I can tell them the plants it came from, but I don't say anything. And they're just talking and all getting really stoned, and someone says, "This is the best stuff from the Big Island this year!" And I say, "Oh, really?" And he says, "You can't grow pot like this unless you're in Hawaii or in the mountains." I never told them it came from 60 miles away or said, "You want

me to call and have them bring down a few hundred pounds for you?"

Why is that off the record? That's a funny story.

Well, all right, I don't know—I guess I'm safe about the growing 500 pounds that year.

You know, there's a five-year statute of limitations—you were safe in like 1983. But what's going to be the next big breakthrough in growing?

[Laughs] The next big breakthrough is going to be being able to grow outside without being hassled—because we should all be growing in the sun, all in greenhouses or just outdoors. Studies have tried to estimate the amount of electricity used in California for growing pot, and it ranges from 1 to 3 percent of the total electricity. Now, you go to places like Colorado, and you know there's 100-lamp grows and more. Here in California, the legal and illegal growers, they're mostly using from eight to 40 lights, but they're *everywhere*. On top of that, you have to cool it all. For a 1,000-watt lamp, you need a half-ton or more air conditioner just for each light, and that's a lot of power.

What are some mistakes that even successful growers make?

Reflectors and reflecting material—they don't use them well enough. They don't position the reflectors that are on the lights correctly. They should take each light and adjust the reflector so that it combines with light from the adjacent lights, and use a light meter so that they can get even light throughout the entire grow instead of hot

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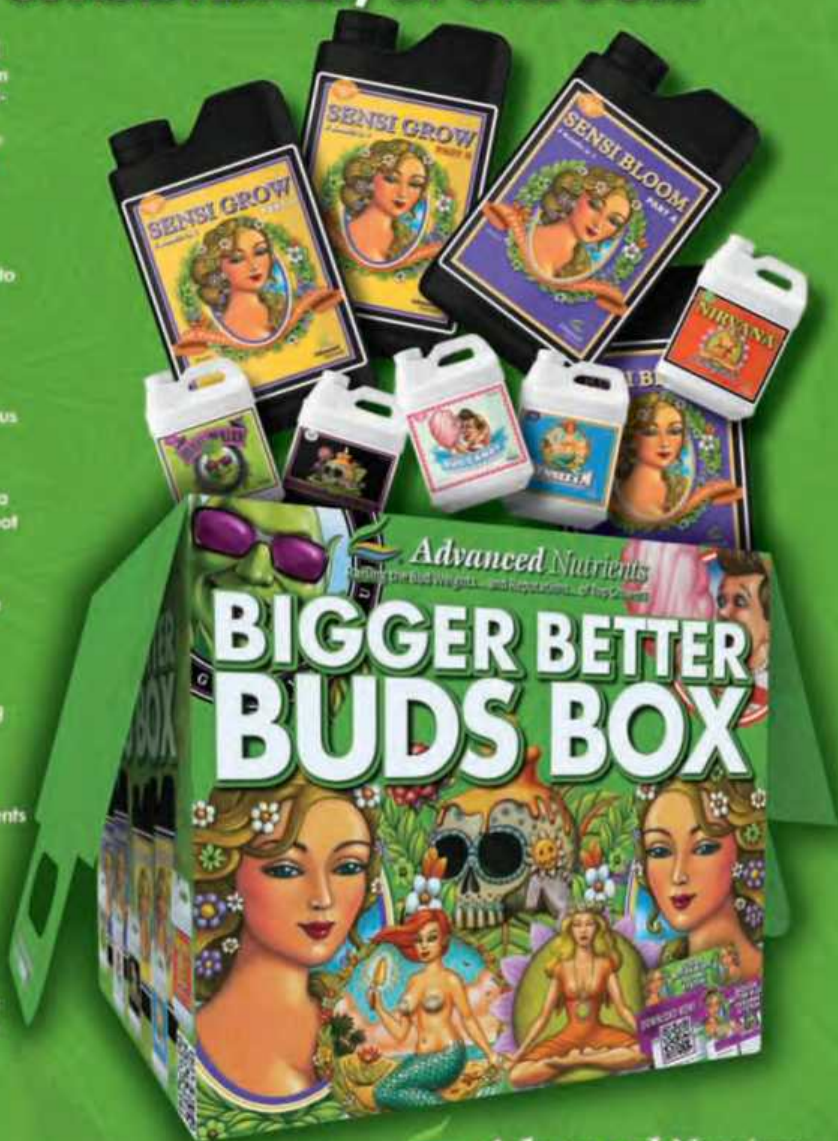
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spots. They'll find they use less light and save on lamps and electricity, which are the biggest expenses.

Also, they should all be recycling their water—it's easy enough to catch the water from your A/C units and get about 70 to 80 percent recovery. Also, it's the use of space, because they all have too many aisles. They think they need them to get to the plants, but you can make your beds to slide so they're moveable, and then you only need one aisle for the entire room to be able to access everything.

Another thing is, they pay a fortune for all these additives and fertilizers. Unless they're paying for very expensive hormones or something, it's all N-P-K—it's all nitrogen, phosphorous and potassium. It's not magic; this nitrogen here is no different from the nitrogen over there. When I go into these hydro stores and see a gallon for \$100, \$150... people are out of their minds. You can buy Miracle-Gro for \$6 and it'll do the same thing.

If Mel Frank's telling people to buy Miracle-Gro, there's going to be a scandal.

Well, I'm not saying that all of these nutrients are very ordinary, but a lot of them are. For instance, this here stuff is made by Can-nagen—or G-Max, if they change the name. That company formulated their products by experiments in deep water, and they monitored what was actually taken up by the plants and developed uptake charts for all these nutrients—including micro-nutrients—over the course of the life of the plant, and then devised their formulas accordingly. I'm using it at less than half-strength, and the plants are going out of their minds.

The other thing is the need to keep your space clean. Growers always need to

isolate new clones, because they can have infections or infestations. A clone can have these incredibly tiny mites that you can't see without a microscope, and the symptoms can mimic things like funguses and diseases, so you can really get lost trying to cure it. And the little bastards can infect your entire garden. The only way to get rid of them is to destroy your plants and bomb your place to disinfect. So all big grows should have an isolation room. Seriously—grow new clones for a few months before you ever let them into your garden.

What's your latest project?

Well, I'm in the middle of breeding feminized seeds. I have F2s from a great THC/CBD hybrid I want to develop, and I'm working as a senior adviser to Spliffin, a company that produces vapor pens and concentrates and flowers, too. In eight months, they've grown from nothing to a major supplier here in California. They're in over 100 dispensaries already, because they have good products and are a committed, real company that's always trying to improve. They have their own grows, so I'm involved in providing whatever advice or resources they need. I also work with a very competent team that consults on building grows, genetics and, basically, the whole industry.

Of course, I'm still involved locally with a few people who breed and freely exchange seeds and clones. And lastly, I'm always photographing, because ultimately one of the things I still want to do, other than always grow, is a book of photos, less text, and just really explain home growing simply—mostly in photographs, because I have them all. So I started an Instagram page at melfrank420 to see what people like. 🌿



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Supply on Demand

The Price of Pot Seeks Equilibrium. *By Mike DiPaola*



It does a body good to be the bearer of glad tidings. To wit: The price of weed is going down. Of course, it depends on whom you ask (and where you ask them), because some claim the price of weed is on the rise—even in trail-blazingly legal Colorado. How to make sense of these disparities?

At the end of June, the capital-market watchers at Convergex were reporting that, in Colorado, “an ounce now sells for between \$250 and \$300 on average, compared to \$300–\$400 last year.”

The market gurus explained that in 2015, producers are “buying additional warehouses and expanding their grow facilities, increasing supply. This is all a function of a maturing market, as dispensaries try to find the market’s equilibrium price.”

On the other hand, we also hear that pot prices are rising—by as much as 5 percent. An investment analyst who prefers to remain nameless (because *High Times* is apparently too groovy for some suits) told us that, “since legal recreational marijuana is a relatively new industry, I don’t think anyone can profess to have a good pricing model just yet.”

As for medical marijuana, some analysts expect prices to rise regardless of the ever-growing supply. “The price for cannabis medical extracts is rising because more patients and prescribing physicians are becoming more concerned about the consistency of supply and quality control,” says Ziv Turner, founder and CEO of the Israel-based One World Cannabis. Thus, as medi-pot consumers become more discriminating,



What is the right price for cannabis?

“Since legal recreational marijuana is a relatively new industry, I don’t think anyone can profess to have a good pricing model just yet.”

“fewer growers—especially those whose background evolved from recreational cannabis—will have the technical ability to breed or extract to more exacting pharmaceutical standards,” resulting in higher-priced meds.

But if medical weed faces a pricier future, the cost of recreational herb is

(probably) dropping. Not surprisingly, the states where rec weed is legal—or soon will be—enjoy the lowest prices.

Lucky stoners in Colorado will get an additional bonus on September 16, the day that the state’s 10 percent sales tax will be temporarily suspended. The tax holiday isn’t intended to boost pot sales; instead, it’s due to an obscure provision in the state constitution’s “Taxpayer’s Bill of Rights.” That one-time, one-day tax break is expected to cost the state about \$100,000. Then, beginning in July 2017, the onerous sales tax will be cut to 8 percent, as part of the state’s effort to put illegal dealers out of business.

All of this is good for Colorado consumers, but how are the pot purveyors doing? Pretty damn well, as it happens: Sales of rec weed this year have so far outpaced 2014 by about 150 percent. Dispensaries are hauling in between two and three times as much ka-ching! as last year, and one estimate predicts that Colorado will ultimately reap \$480 million in revenues—a 50 percent increase compared to 2014.

To put it simply, we don’t know the “real” price of weed yet—and we won’t until cannabis is legal in all 50 states, with at least some uniformity to regulations and tax regimes. And that will be a good day. Don’t forget to check out—as well as contribute to—the *High Times* THMQ on page 42. 🌿

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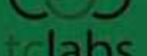
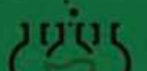
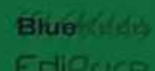
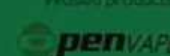
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SUBJECT: **Seedy**

FROM: **scubadiver**

🌿 I produce otherwise good buds from my The Doctor strain, but almost every time, in the last few weeks of flowering my plant starts to develop seeds, and I have to cut them down before it's right time. Why is this happening, even when I don't have male plants in my indoor garden?

Dear scubadiver, Somehow, pollen is getting onto your female plants. This could be from outside, as pollen is very light and can travel many miles on a breeze. If there are hemp fields or clandestine outdoor guerrilla gardens nearby, the pollen could easily float into your intake fan and seed up your crop.

The other possibility is that your plants are hermaphrodites. That means they share male and female flowers and can thus pollinate themselves. This can happen due to genetics or stress and typically affects plants that look like females but have a few tiny yellow "bananas" that open up and let out pollen as a survival instinct of an annual plant that wants to breed and make seeds for the next year's growth cycle.

I recommend putting a filter on your intake fan that's capable of catching pollen. This means you need a screen that's able to filter out something 25-30 microns in diameter. You also want a fan that pulls the air through the filter as opposed to one that pushes air through the filter, so mount the filter before the fan.

This close-up shows a seeded bud of Canna Sutra from Delta 9 Labs.



Danko Tip: Pick up your growing containers when watered and dry to know how to tell the difference and water accordingly.



Expanded clay pellets work well for DWC buckets.

SUBJECT: **Medium for DWC**

FROM: **Mitchell T.**

🌿 I'm doing my first DWC setup and the medium I want to use to hold the plant is rockwool. I was wondering, do you recommend something else or is there a better medium?

Dear Mitchell,
For DWC (Deep Water Culture) growing, I recommend using expanded clay pellets. Sometimes referred to as grow rocks, these lightweight round balls of heated clay are inert and highly porous, allowing plenty of air to reach the roots they hold. Rockwool isn't ideal for DWC due to the fact that it stays very moist at all times. It's also not very ecologically friendly and itchy to work with. If you do choose to use rockwool, the first thing you should do is soak the cubes or slabs in water. Dry rockwool dust is bad for your lungs so keep it wet at all times.

SUBJECT: **Saving Broken Plants**

FROM: **KP**

🌿 Hey. I have a real problem. My ex broke my plant as a final FU. I tried tape and a stake but it was dying fast. So I cut it at the broken spot and put the stem in water. The leaves have stopped wilting and seem to be coming back. What if anything else can I do to save my baby? She's about two feet tall.

Dear KP,
I'm sorry to tell you but your plant will be dead shortly. Once a plant has been separated from its roots, it begins to die. You had the right idea when you staked it up with tape. The only hope for survival was for the cut branch to somehow re-attach itself. This works with branches that are broken but still attached but I've never seen it work when a plant has been completely removed from its roots.

SUBJECT: **Slow and Low**

FROM: **Unhappy Dwarf**

🌿 I have had a couple of plants do this to me; they're short with tiny leaves. I have one I planted December 1st and it's only about a foot tall. Another one is about 18" tall with lots of leaves and branches. If it was the size it's supposed to be, it would be four to five tall by now. Am I causing this or were they bad seeds? HELP!

Should I give up on them also?

Dear UD,
Your plants lack of growth could be caused by several factors. First and foremost is light. They must get enough light to perform photosynthesis and create new cells. If you're growing outdoors, the plants need full direct sunlight for at least 14 hours. Indoors, you need to ensure the plant is getting enough lumens from your grow light and also that it's not too far away from the plants to be effective.

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Danko Tip: Transplant root-bound plants into larger containers for optimal growth levels.



This stunted plant never grew more than a few inches.

Your plants could also be suffering from a lack of food. Plants need nutrients to grow and eventually use up whatever might be present in their medium. You must provide your plants with a nutrient solution that will provide the macro and micronutrients necessary for healthy growth.

The third factor is genetics. It doesn't sound like you're familiar with the strains you planted and so they might be bunk genes. Seeds pulled out of a baggie of buds don't tend to perform nearly as well as well-bred F1 hybrids with hybrid vigor.

You don't have to give up on your plants but you should definitely change their situation by adding light and nutrients. If that doesn't help, then you'll know it was the seeds themselves and you can move on to some better genetics in the future.

SUBJECT: **Snail's Pace**

FROM: **A.rod**

🐌 I'm only a grower for personal medical use, but the problem is since it's been raining like crazy where I live, all these damn snails and rollie pollies are eating my plants alive! What's the best solution?

Dear A.rod,

Snails can be a serious problem, especially for young plants. Signs of their damage are the mucous trails they leave behind and holes in leaves of plants. It's a good idea to spread some diatomaceous earth around the plants to discourage snails and slugs.

One of the best ways to keep them from harming your plants is to maintain a dry top layer of soil by watering from below, but it doesn't sound like that's possible in your growing situation. Another great and safe remedy is to sink a cup of beer into your soil leaving the rim of the cup at the soil level. Slugs can't resist the yeasty concoction and will drop right into the cup and drown.

I try not to recommend slug and snail killing products such as Deadline (Sluggo is the safer alternative if you have pets), but I would be remiss not to mention them as a nuclear option. Spray a thin line of it about a foot or so diameter around the base of your young shoots in the evening and then every three to four weeks after that.

Rollie pollies (also know as pillbugs or potato bugs - scientific name: *Armadillidium vulgare*) mostly eat dead and decaying plant material, but they've been known to eat roots and stems of living plants as well, albeit rarely. They prefer damp areas but are fairly harmless to your plants.



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Danko Tip: Keep hot ballasts out of your growing space to reduce heat buildup.

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SUBJECT: **Rockwool Into Soil**

FROM: **Under the Sun**

🌱 Can seeds that have been started in rockwool be transplanted to a soil or soilless mix? If so, how?

Dear UTS,

Yes, it's very easy to transplant seedlings that have been started in rockwool into your soil or soilless mix. Simply scoop out a hole big enough for the rockwool cube to sit inside and place it in the hole. Backfill any remaining soil around and on top of the cube and water it in. In no time, the roots will extend out into your growing mix and your plant will be on its way. Remember to keep the rockwool moist at all times. If it dries out before the roots reach out into the mix, you could have a catastrophe on your hands. Roots in dry rockwool dry out quickly themselves and young plants without large root systems can die fast.

SUBJECT: **CBD from THC**

FROM: **Bobo 420**

🌱 What's the deal with 'special' CBD strains? They say that they have a higher percentage of CBD in them, but CBD only comes when THC breaks down. So, technically every strain only gets its CBD after the plants have been harvested, cured and stashed for some time? Do they have higher percentage of CBD because they can utilize more from the THC percentage or what's the deal?

Dear Bobo,

You are confusing CBD with CBN. CBN (or cannabinol) is the cannabinoid that results from the degradation of THC (delta9-tetrahydrocannabinol). CBD (cannabidiol) is the non-psychoactive cannabinoid present in high-CBD strains such as Harlequin, CBD God and Cannatonic. CBN actually has some psychoactive effects (less than THC) and has a reputation for making people tired and groggy - great for patients who suffer from insomnia. CBD provides a host of medicinal benefits we're just getting to understand and some scientists are excited about the prospects of proper testing of CBD in the future. 🌿

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Lauren takes a break on the beach.

We first met Lauren Downes at the High Times Cannabis Cup in Everett, WA last September. She was responsible for organizing a seminar of experts to discuss “The New Washington Apple”—how to navigate the new recreational pot law that lends itself to success for all stakeholders. It’s something Lauren knows a bit about. She jumped into Washington’s cannabis industry as soon as it became legal in Washington State.

Born and raised in Woodinville, part of metropolitan Seattle, Lauren first worked in the coffee and cacao industry, encouraging practices that promote social, economic, environmental sustainability. She then worked in California’s cannabis scene as a budtender and manager in dispensaries in Redding and Shasta.

Following extensive travel, especially in the Caribbean, where she’s established a wealth of connections, Lauren accepted a job as a dispensary manager after I-502 passed, Washington’s legalization initiative.

Her business model—“providing clean, aromatic and potent cannabis at a reasonable price”—led to her current position as the manager of Bud Hut, a busy pot shop in south Everett, with plans to open two more in Washington and expand its brand into neighboring states.

Lauren says, “We’re all in this together—the retailers, processors and producers. We need good relationships to promote profitability. There’s no need to exploit this industry with profiteering. It takes all of us to give the industry a good image.” 🌿

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Got a question for Dr. Mitch? Email him at 420research@gmail.com.

I'm arguing about depression and marijuana again. Can you help?

Mel N. Cholia

Hi Mel,
Depressed people often turn to the plant, creating a false correlation between the diagnosis and its use. (I still prefer cognitive-behavioral therapy as a first line of treatment.) But new longitudinal data show—yet again—that cannabis use does not precede or cause the mood disorder. Also, these results appeared in a huge national data set, so the absence of a link didn't stem from a sample that was too small.

If new laws make marijuana use rise, couldn't it stem from the fact that people are more comfortable telling the truth about their pot use once it's legalized?

U.R. Lion

Hi U.R.,
Good point! Although we actually haven't seen much of an increase in states with medical or tax-and-regulate laws on the books, people may indeed be more willing to declare their use when the laws won't punish them for it. Data from 2012 reveal that even juvenile arrestees are more willing to declare their use in medical versus prohibition states.

You've mentioned your favorite cannabis-themed books, movies and tunes. How about a favorite painting?

Art L. Over



Bosch's incredibly high art

Hi Art,
Although they have nothing to do with the plant, you'll probably enjoy the works of Hieronymus Bosch or Francisco Goya after hitting the vaporizer.

I know you're into vaporizers, but I don't see smoking as being harmful, so why bother?

Captain Hack

Hi Captain,
Although there's no worry of lung cancer, research confirms that frequent toking (defined as once a week or more in this study) increases your chances of morning cough, hacking up phlegm and wheezing. The authors of the study recommend "decreasing cannabis use," but my lab has shown that switching to a vaporizer decreases these symptoms in only a month. Many cannabis smokers seem to have these symptoms but never attribute them to smoking. Switch to the vaporizer for a month and I bet you'll be surprised. 🌿

Dr. Mitch Earleywine is a professor of psychology at SUNY Albany and the author of Understanding Marijuana and The Parents' Guide to Marijuana.



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The Evolution of Dabbing

A brief history of heating hash. *By Craig Coffey*

Those new to the process of dabbing can sometimes get a little freaked out by what they see: Blowtorches, glowing hot metal and butane cans surely come across as much more threatening than the simple joints and bowls of yesteryear. However, these people seem to be fairly comfortable with the old-school toking method known as “hot-knifing” (possibly because it brings out every stoner’s inner biker/cowboy). Yet despite the dab novice’s comfort level, hot-knifing uses the same basic technique to get you high: heat a bit of metal, apply your hash and inhale the vapor.

So, with that in mind, let’s take a quick tour of the gradual innovations that have brought us to where we are on the dab scene today.

heated with a torch, and then a dab of hash is applied. In addition to increased efficiency, the swing skillet is also credited with dissemination of the word “dab.”



The Nail and Dome

This vital link in the evolutionary chain moves the heated bit

of metal into an easier position for the hash consumer. The swing skillet is very messy; the nail and dome are responsible for cleaning up dabbing, and they also led to other materials—such as quartz and ceramics—being adopted as the hot bit you put your hash on.



The Hot Knife

It’s crude, it’s basic, and it’s also probably an ancient technique

for getting stoned: All you have to do is stick an iron in the fire until it’s really hot, then touch your hash with it and catch the vapors before they escape. It may seem primitive now, but whoever pioneered this technique basically invented the wheel as far as the dab world is concerned.



The Domeless Nail

After a few years of taking the dome off and putting it back

on, some smart and/or lazy guy invented a way to do away with that step altogether: just get the nail hot and hit the hash. However, at this point we were all still required to carry around blowtorches.



The Swing Skillet

This evolutionary step adds the element of control to hot-knif-

ing, making it possible to get all—or almost all—of the hash into your lungs. A flat bit of metal is attached to a downstem that catches the vaporized hash. The metal is



The Enail

We live in a digital world; even our bongos plug into the wall these days. The

enail can maintain the perfect temperature all day long without using a flame. This evolutionary step gives us temperature control and, finally, removes the torches from our hands. ✨

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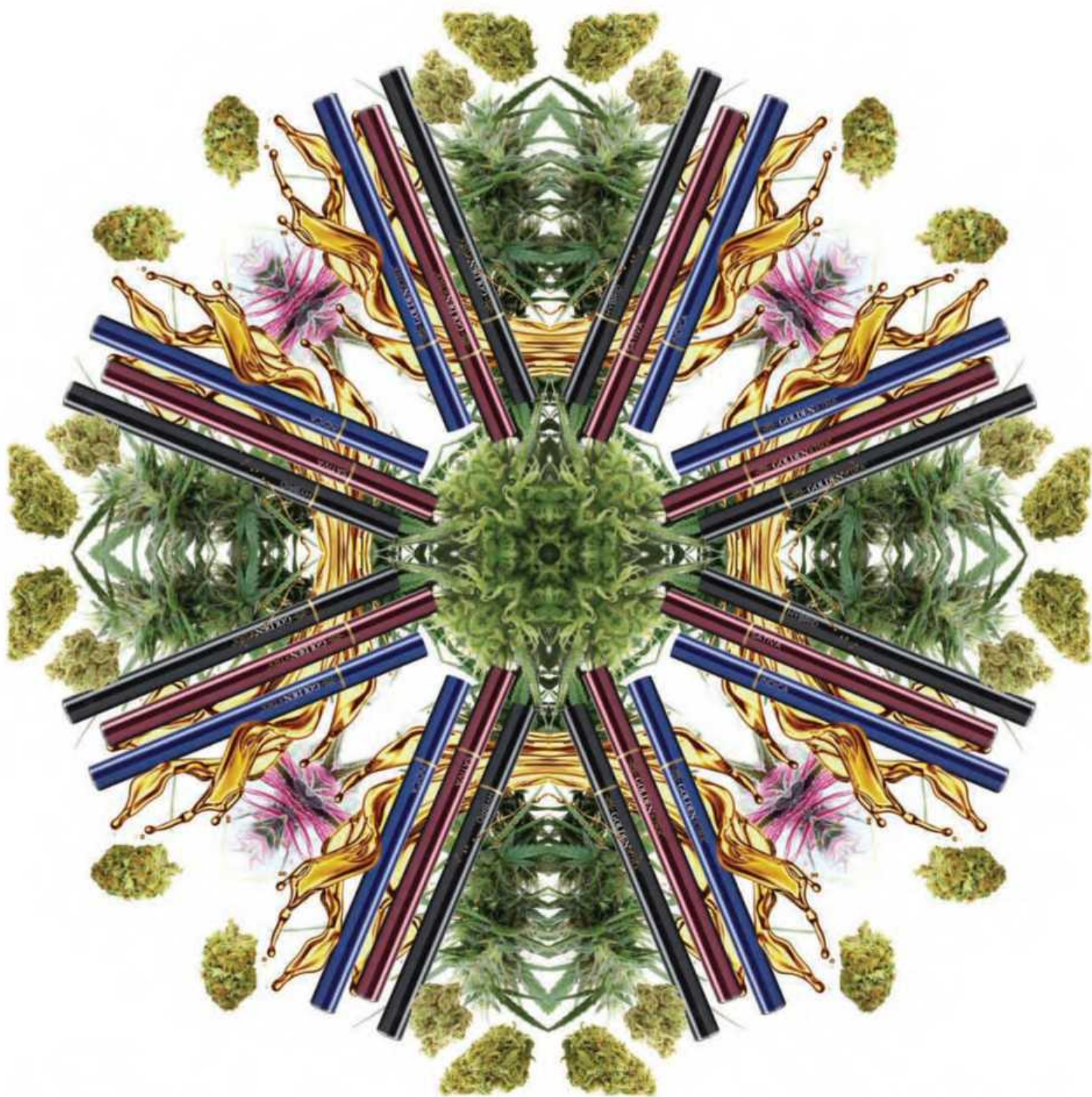
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Requiem For The Report

A look back at my behind-the-scenes visits to Stephen Colbert's show.

EVER SINCE IT first started airing in October 2005, *The Colbert Report* was one of my all-time-favorite TV shows. And thanks to my friend Jason (a cool Deadhead dude who happened to be an editor on the show), I've had the rare pleasure of visiting the set several times over the years—smoking

out some of the crew and getting a behind-the-scenes look at a professional cable comedy show.

My first visit was on October 17, 2006, which happened to be the show's first-anniversary episode. Colbert premiered a new drop-down screen, a revised triple self-portrait, and even popped out of a giant cake. That night, I got to eat a piece of their eagle anniversary cake (not the giant one) and film a skit about "Rocktober" (which, sadly, never aired). I chronicled the whole experience in my column (April 2007) and even received hate mail from a few dullards who were unable to grasp that my absurdist attacks on Colbert were, like his TV character, pure satire.

I returned that December for the "Countdown to Guitarmageddon" episode, which featured a "Shred Down" guitar duel between Colbert and Decemberists guitarist Chris Funk, judged by—among others—the then governor-elect of New York, Elliot Spitzer. After tearing off his sleeves and strapping on a five-necked guitar, Colbert faked an injury and brought in a surprise proxy—none other than Peter Frampton.

Since seats weren't typically issued to guests of the staff, Jason would sometimes walk me down to the set for special performances—



such as the epic episode when Metallica when Metallica appeared in September 2013. Not only did I get to watch them perform "For Whom the Bell Tolls" and "Master of Puppets" mere yards away from me; I also got to stand beside Jon Stewart (who made a cameo) and touch one

of Colbert's two shiny new Emmy Awards. On most visits, however, I just watched on the monitors in Jason's office—which, on one occasion, turned out to be the best seat in the house.

It was on August 15, 2011—not a particularly memorable episode onscreen. But off-screen, the Susan Rice interview had run way too long, and I got to watch from the couch as Colbert himself stood in front of me for half an hour fine-tuning the edit with Jason.

When I heard *The Report* was ending its run in December of last year, I arranged one last visit during their final week on the air. Apropos, stoner star Seth Rogen was the guest, promoting his controversial new film *The Interview*. (It was the last press appearance he made, as the next day North Korea's terror threats ignited a sociopolitical shitstorm).

Though Colbert will no doubt be dropping his narcissistic neo-con persona when he takes over on *The Late Show* this September, I know he'll be as hilarious as ever. And hopefully, with a little help from Jason, I can still visit him in his new digs—around the corner from *High Times* at the Ed Sullivan Theater. 🌿

For video links and more, go to hightimes.com/almostinfamous.

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The Media Switch Sides

The days of mainstream anti-pot propaganda are coming to an end.

Allen St. Pierre is executive director of NORML. Visit norml.org.

Not so long ago, the mainstream media's depiction of cannabis users was decidedly negative or, if you were lucky, somewhat neutral. But now the ever-changing cultural and political landscape regarding marijuana has caused the media and the topic of cannabis to become fast friends.

The coming of age of several pot-friendly generations—the boomers, the X'ers and the millennials—has been responsible for this sea change in terms of more insightful and tolerant views toward cannabis, resulting in the further erosion of prohibition policies and the eradication of anti-cannabis stereotypes. Among the prime examples in the last few years:

In the 1980s and '90s, the *New York Times* and its editorial page were wildly anti-pot, reflecting the influence of the paper's longtime editor (and later columnist) A.M. Rosenthal. Fast-forward to 2014, and the Gray Lady's editorial board (now led by Rosenthal's son Andy) took a 180-degree turn, not only questioning the government's rationale for the War on Pot, but also strongly advocating that cannabis prohibition come to an immediate end.

Likewise, in the 1980s and '90s, the *Washington Post's* editorial and opinion pages were in effect a “rip-and-read”

conduit for government propaganda furnished by the DEA, the National Institute on Drug Abuse, DARE and the Partnership for a Drug-Free America. Back then, the Graham family—the paper's long-time owners—were lock, stock and barrel against any degree of cannabis-law reform. These days, the *Post* is owned by Amazon founder and CEO Jeff Bezos, a person far

more libertarian (and hip) than the Grahams. As a result, regular readers of the *Post* can look forward to some of the best-researched information about cannabis available.

With no less than three separate one-hour specials hosted by Dr. Sanjay Gupta, the Cable News Network (CNN) might

as well change its name to the “Cannabis News Network.” CNN has become a leader in cannabis-centric programming; the network scored big ratings with its series *High Profits*. Other cable-news outlets—CNBC, Bloomberg and MSNBC—have also run series examining the future of pot legalization in America.

Other news outlets now have cannabis columnists (the *Denver Post*, the *Seattle Times* and the Colorado alt-weekly *Westword*, just to name a few), while traditional and online business publications like *Forbes*, TheStreet.com and Motley Fool now use weed watchers to report on cannabis-related stocks, business

prospects and regulatory changes.

Thankfully, much of the information that now appears in the mainstream media is obtained from real experts on cannabis—consumers, cultivators and commercial sellers—as well as publications and organizations like *High Times*, NORML, the Drug Policy Foundation and the ACLU.

But has this generational changing of the guard been entirely responsible for the media's transformation from lapdog to watchdog? No. As always, follow the money.

Today's media outlets no longer kowtow to inaccurate consumer data regarding the reading and viewing habits of their audience. Publishers, TV programmers and marketers today are highly aware of exactly *who* views their product and *when* and *how* it's shared. New-media publications and platforms like Vice, Fusion, Current, the Huffington Post and Reddit, along with old stalwarts like the libertarian magazine *Reason*, actively cover the issue of cannabis in a manner that reformers from a bygone era never could have conceived. In fact, they put economic pressure on an increasing number of mainstream outlets to prominently cover pot. One example: In May, both *Time* and *National Geographic* featured cannabis-law reform on their covers.

News stories about Congress, the environment, wars and taxes will always be important, of course—but the media have now discovered that cannabis-related content is a magnet for eyeballs and clicks. 🌿

CNN has become a leader in cannabis-centric programming; the network scored big ratings with its series *High Profits*.

FREEDOM FIGHTER

By Kevin Mahmalji, NORML national outreach coordinator

A Matter of Destiny

In the Lone Star State, Destiny Young envisions an end to pot prohibition.

Destiny Young ran a childcare facility out of her home in Texas, but her outspoken opposition to America's marijuana laws caused it to be shut down. It was a lesson in how blindly and fiercely our nation's social workers and childcare officials continue

to embrace anti-cannabis propaganda.

Young now serves as the membership director for Texas NORML. Through her activism, she's discovered a talent for information and data management. Her ability to implement a membership incentive program and to streamline internal systems management has



resulted in an explosion of new members. Most recently, she's worked closely with activists in San Antonio to revitalize the marijuana-law reform efforts in the nation's seventh-largest city, including the launch of a bilingual website and a new outreach program.

Young is adamant about educating law-enforcement agencies,

and social workers who oversee the welfare of Texas families and children about the economic and societal benefits of legalizing marijuana.

“I'm focused on hope in completing the legalization process in Texas,” she says. “We need to continue working to further the social-justice reforms that are required to end the many injustices associated with the prohibition of marijuana.”

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JOE'S TRADING POST

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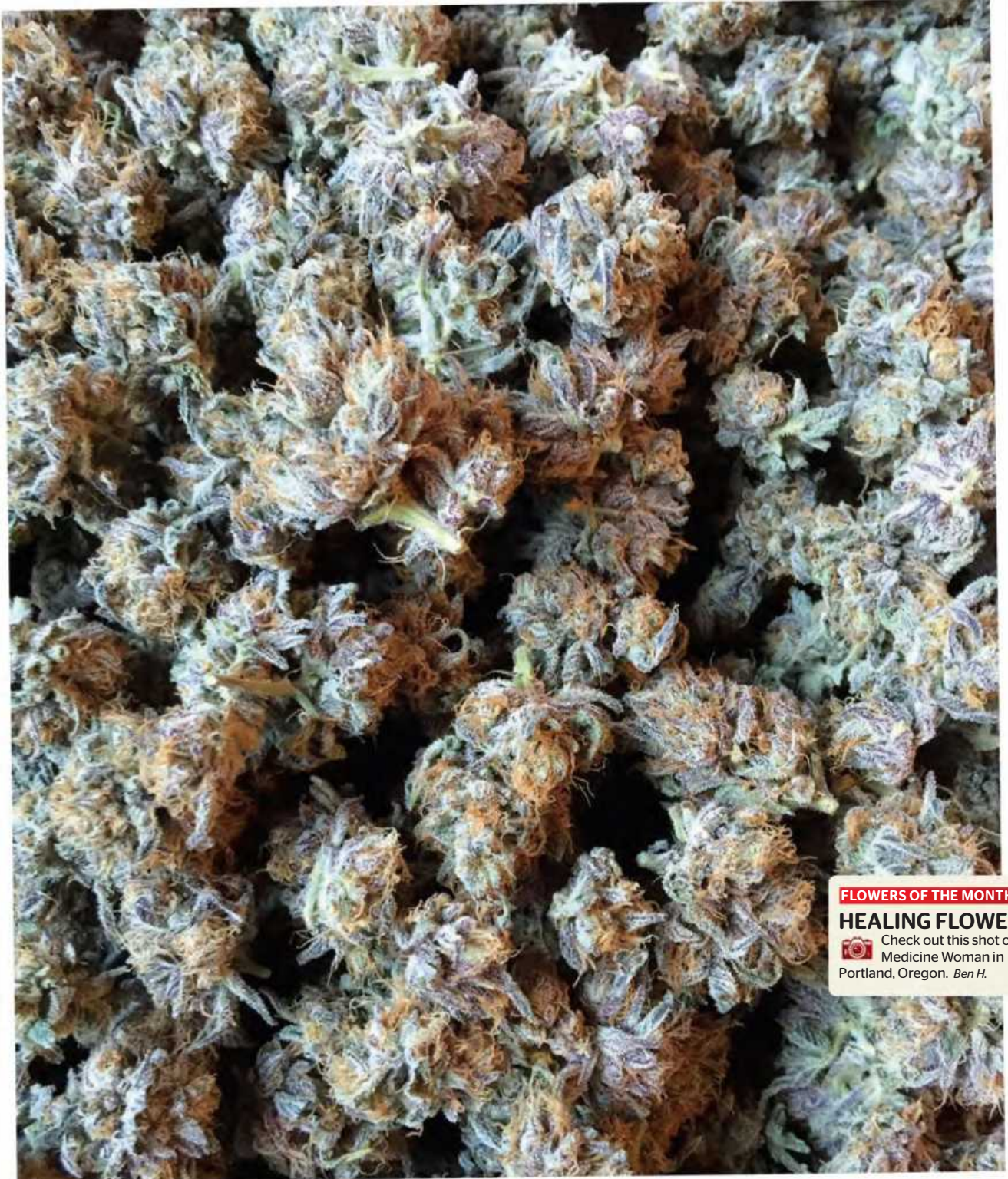




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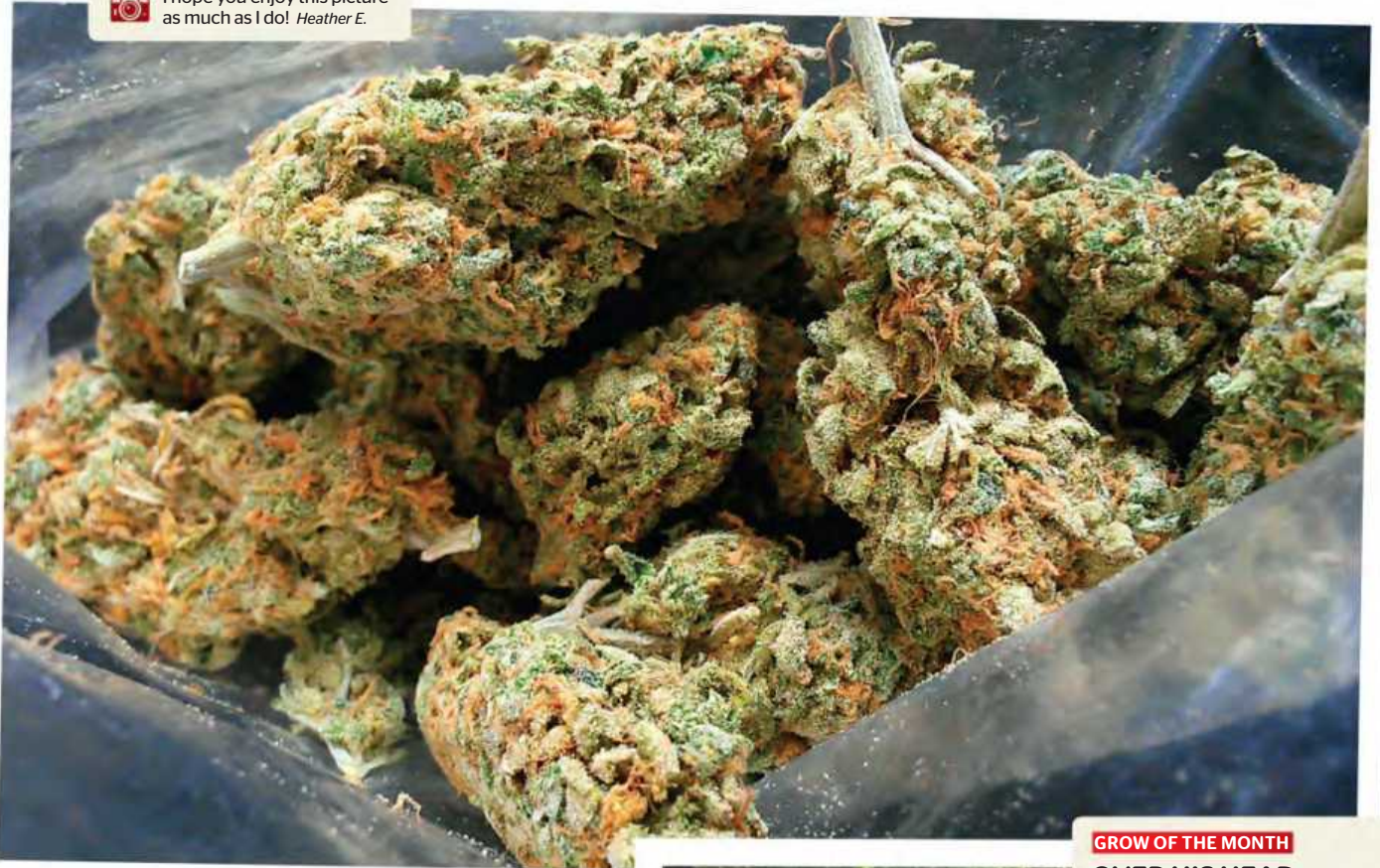
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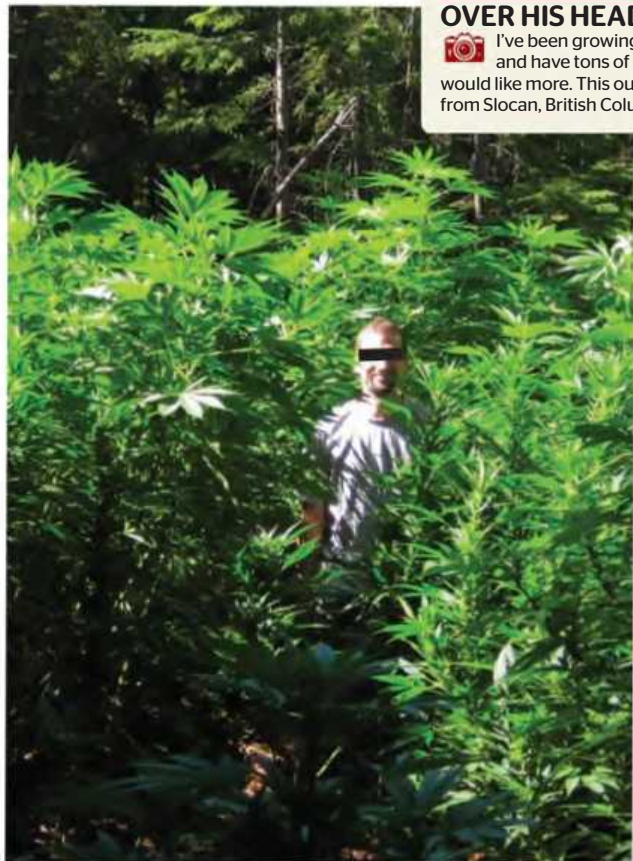
I hope you enjoy this picture as much as I do! *Heather E.*



GROW OF THE MONTH

OVER HIS HEAD

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NUG OF THE MONTH

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► Fantastic Flowering

Cultivation master Jorge Cervantes checks in with another excerpt from his new book, *The Cannabis Encyclopedia*. This time Jorge puts the focus on peak flowering, enlightening you on cannabinoid production, trichomes, terpenes and essential oils.

► Mel Frank in Arizona

When the author of the legendary *Marijuana Grower's Guide* visits a massive new legal cultivation facility in Arizona, he reveals what it takes to maintain a perpetual harvest of 1.7 pounds per light in a huge commercial grow space. Let Mel be your guide!

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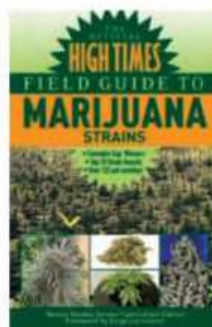


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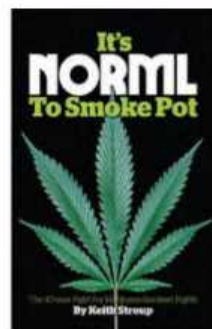
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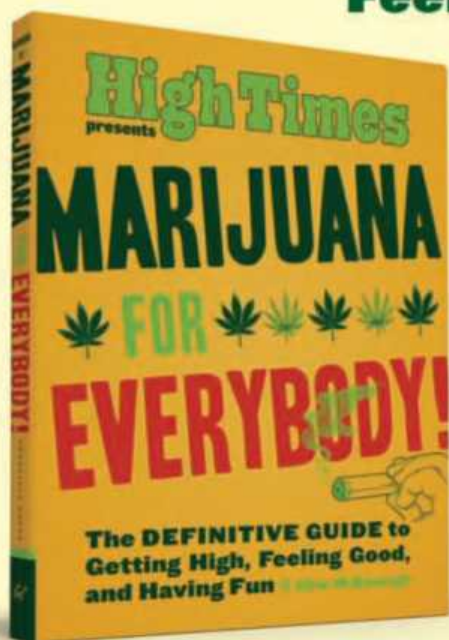
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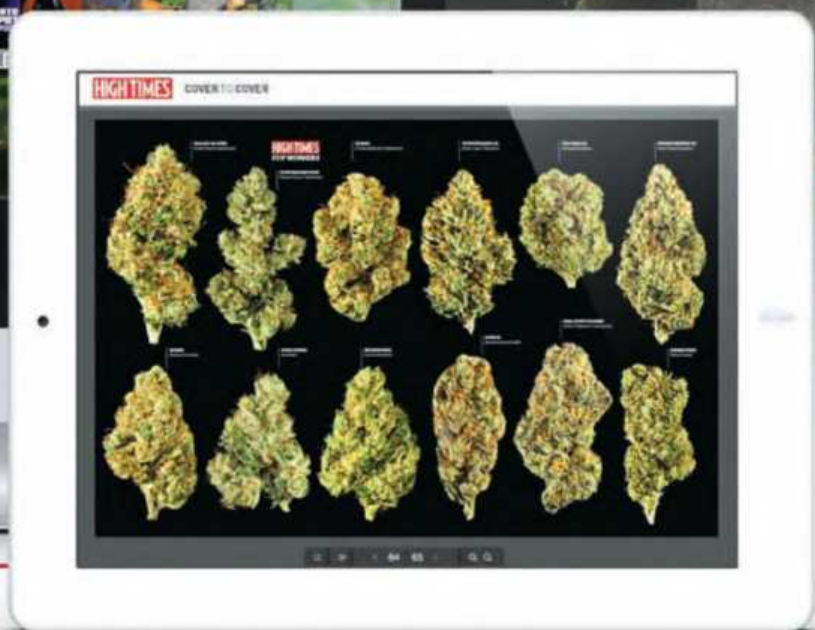
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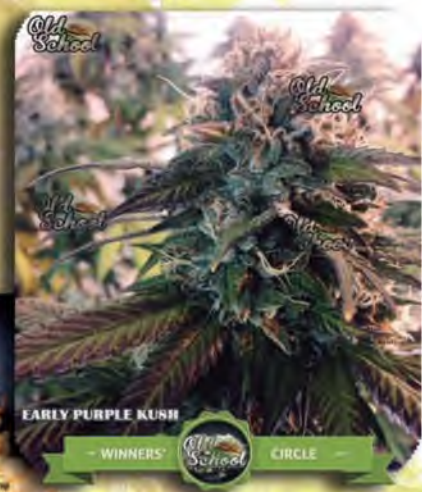
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